Refrigeration Service Engineer

VOL. 15 NO. 2 ★ ★ ★ FEBRUARY · 1947

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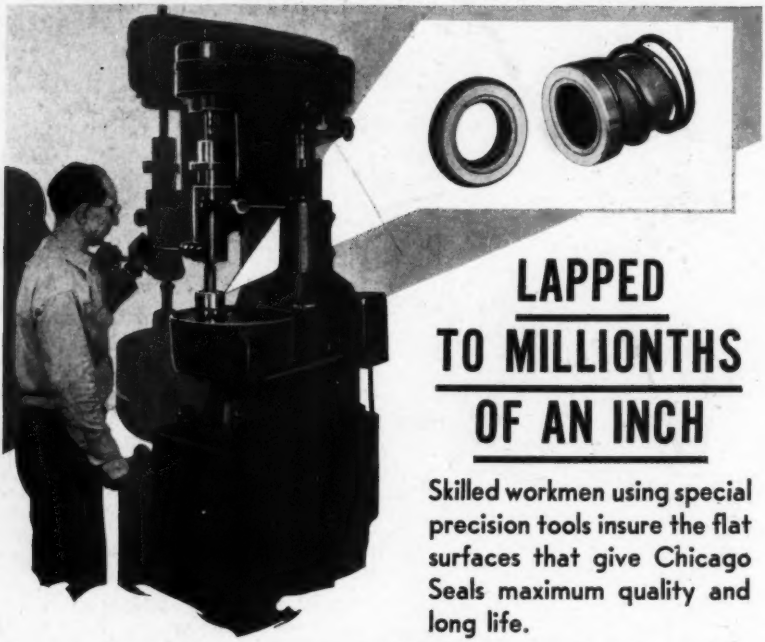
DETROIT

CHICAGO SEALS



LAPPED TO MILLIONTHS OF AN INCH

Skilled workmen using special precision tools insure the flat surfaces that give Chicago Seals maximum quality and long life.

SOLD THROUGH REFRIGERATION WHOLESALERS

FOR BETTER PERFORMANCE USE

CHICAGO VALVE PLATES

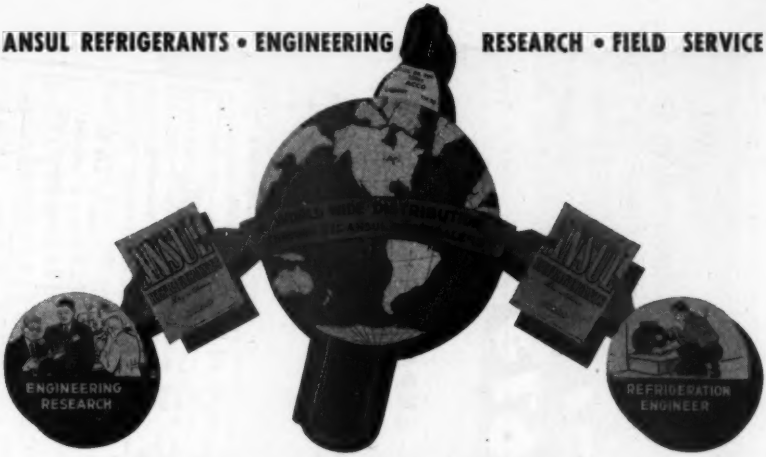
PERFECT BALANCE

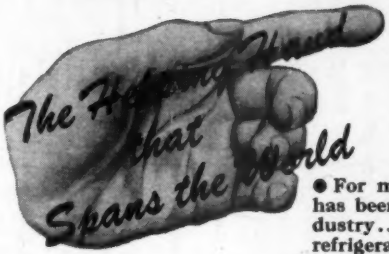
Chicago Seals
MODERN DESIGN

CHICAGO SEALS

CHICAGO SEAL CO. 20 N. WACKER DR., CHICAGO 6, ILL.

ANSUL REFRIGERANTS • ENGINEERING RESEARCH • FIELD SERVICE





ANSUL
TECHNICAL SERVICE

● For more than 30 years the name ANSUL has been well known in the refrigeration industry... not only as a producer of high grade refrigerants... but, also, as a reliable source for authentic up-to-the-minute technical information on refrigeration processes and problems-in-practice.

Thirty years of accumulated data, plus intensive and exhaustive research in ANSUL'S own research laboratories ... covering many phases of refrigeration operations... have produced an Ansul library of technical data, unsurpassed in accuracy and scope.

ANSUL Technical service is your "First Assistant"... the "Helping Hand" that reaches Refrigeration and Service engineers everywhere... through ANSUL's world-wide wholesale organization. You are welcome to make full use of it any time without cost or obligation.

Take your problems to your wholesaler. He probably has the ANSUL technical bulletin which will answer your questions. If not, he will willingly get the information for you. He, too, wants to help make your job easier and more profitable.

ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration and service engineers on problems which arise from time-to-time in the operation of refrigerating systems.

ANSUL REFRIGERANTS ARE AVAILABLE AT LEADING WHOLESALERS EVERYWHERE

ANSUL CHEMICAL COMPANY
REFRIGERATION DIVISION, MARINETTE, WISCONSIN
DISTRIBUTORS FOR KINETIC'S "FREON-11," "FREON-12," "FREON-21," "FREON-22" AND "FREON-113"

You Can Stake Your *Reputation* on These Two

"DETROIT" No. 573 No. 673

THERMOSTATIC EXPANSION VALVES

You can place complete dependence upon these two valves. Stake your reputation on them—they never let you down. Try these valves on commercial installations from ½ to 3½ tons Freon-12.

UNIT NUMBERS OF NO. 573 VALVE

Stock Items with Your "Detroit" Wholesaler
Use "Detroit" Unit Numbers When Ordering

Unit No.	Refrigerant	Max. Pressure	Connection
57300	Freon-12	45	Inlet ⅜" SAE for ⅜" × ¼" SAE for ¼" × ⅜" reducing reducing nut. Outlet ¼" nut
57309	Freon-12	10	
57311	Methyl	35	
57315	Methyl	5	

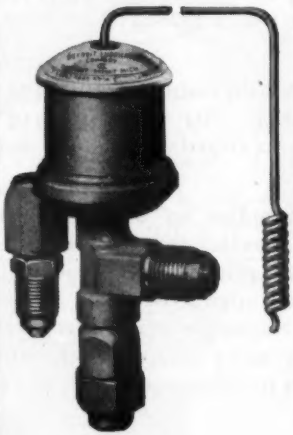
Rated at ½ ton Freon-12 or .9 ton Methyl

UNIT NUMBERS OF NO. 673 VALVE

Stock Items with Your "Detroit" Wholesaler
Use "Detroit" Unit Numbers When Ordering

Unit No.	Refrigerant	Max. Pressure	Connection
6731968	Freon-12	15	Inlet ⅜" SAE for ⅜" × ¼" reducing nut. Outlet ¼" SAE
6731428	Freon-12	55	
6731563	Methyl	10	
6731411	Methyl	40	

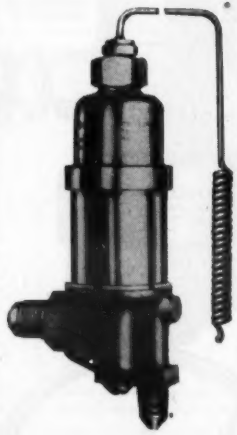
Rated at 1 ton Freon-12 or 2 ton Methyl



No. 573

ALL THE DEPENDABILITY OF THE 673 FOR SMALLER INSTALLATIONS

This valve, in ½ ton (Freon 12) capacity, has the quality and operating characteristics of No. 673. Designed for small commercial installations, its double diaphragm gas charged power element permits close superheat control at low suction pressures and provides motor overload protection in its simplest, most effective form, using only one power element.



No. 673

FOR MANY YEARS "THE STANDARD OF THE REFRIGERATION INDUSTRY"

"Detroit" No. 673 has a long record of dependable performance in a wide variety of installations and has been, for many years, "the standard of the refrigeration industry". Designed for average size commercial and air-conditioning installations. Sensitive and accurate in operation—gas charged for instant response and reduction of motor load during pull-down cycle. Duraflex bellows and Delubaloy needles and seats resist corrosion and assure long life.

DETROIT LUBRICATOR COMPANY

"DETROIT"

General Offices: 5800 TRUMBULL AVENUE, DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

THIS ELPECO THERMOTRON

CONTROLS EITHER "FREON-12" OR METHYL CHLORIDE

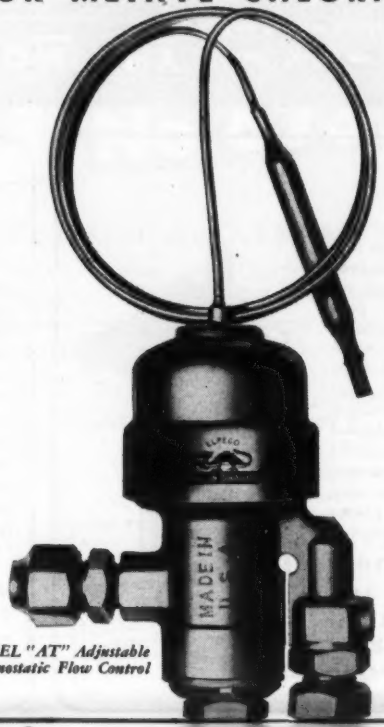
INCREASES VALVE USABILITY *100%*

● When you make a service call involving control valves—four Elpeco THERMOTRONS will cover your needs. This means you can increase your valve usability 100% with THERMOTRONS. Also, less investment is needed.

The reason is in the design of the Model AT adjustable thermostatic Flow Control. Four clockwise turns of the adjusting stem changes a "Freon-12" valve to one for methyl chloride. The adjustment is simple and always the same. Installation is quicker because you have no parts to purchase or replace to get the proper capacity.

The table gives the capacity of the adjustable THERMOTRONS for "Freon-12" and methyl chloride. It shows how easily they can be selected.

Your selected Elpeco wholesaler has THERMOTRONS in stock to help you with your control valve needs. Save time and money by standardizing on the Green Dragon line.



MODEL "AT" Adjustable Thermostatic Flow Control

THE GREEN DRAGON LINE

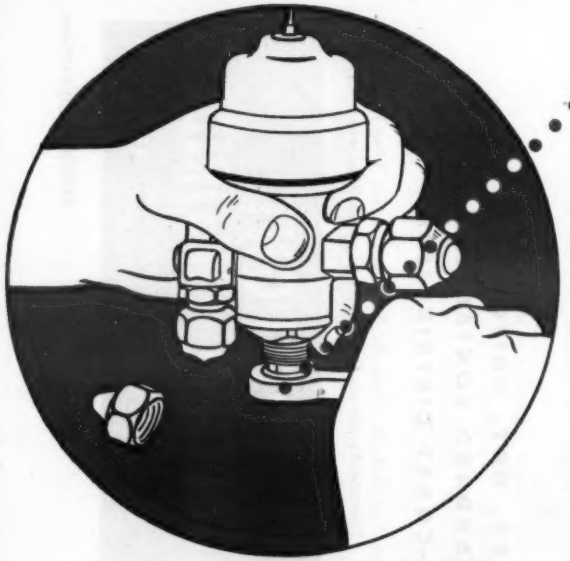
THERMOTRON
—flow control

UNITRON
—unit cooler

CUBETRON

Your selected Elpeco wholesaler has THERMOTRONS in stock to help you with your control valve needs. Save time and money by standardizing on the Green Dragon line.

MODEL "AT" Adjustable Thermostatic Flow Control



From "Freon-12" to Methyl Chloride in 4 Clockwise Turns

THERMOTRON CAPACITIES

TYPE	LIQUID TEMPERATURE THERMOTRON OUTLET DEGREES FAHR.	REFRIGERATION CAPACITY—TONS "FREON-12" Liquid Temperature THERMOTRON Inlet ° F.			METHYL CHLORIDE Liquid Temperature THERMOTRON Inlet ° F.		
		80°	100°	120°	80°	100°	120°
AT-25*	—10°	.10	.11	.12	.20	.22	.24
	5°	.13	.15	.16	.26	.30	.32
	20°	.17	.19	.21	.34	.38	.42
	40°	.22	.25	.27	.44	.50	.54
AT-50*	—10°	.20	.23	.25	.40	.46	.50
	5°	.27	.30	.33	.54	.60	.66
	20°	.33	.37	.40	.66	.74	.80
	40°	.45	.50	.55	.90	1.0	1.1
AT-100*	—10°	.40	.45	.49	.80	.90	.98
	5°	.53	.60	.66	1.0	1.2	1.3
	20°	.67	.75	.82	1.3	1.5	1.6
	40°	.90	1.0	1.1	1.8	2.0	2.2
AT-200**	—10°	.83	.93	1.0	1.6	1.8	2.0
	5°	1.1	1.2	1.3	2.2	2.4	2.6
	20°	1.3	1.5	1.6	2.6	3.0	3.2
	40°	1.8	2.0	2.2	3.6	4.0	4.4

* Based on 4° Super-heat change from closed position to fully open.

** Based on 6° Super-heat change from closed position to fully open. Inlet liquid at saturation temperature and vapor-free.

ELPECO
GREEN DRAGON

ELECTRIC POWER EQUIPMENT CORP.

412 NORTH 18TH STREET, PHILADELPHIA 30, PA.

CUBETRON
—ice cube maker

CAPACITRON
—capacity booster

EXOTRON
—condenser

CONDENSOTRON
—condensing unit

THERMEK
—heat transfer surface

SPREAD THE SUPPLY OF

Artic

REG. U.S. PAT. OFF.

DU PONT METHYL CHLORIDE

- 99.5% PURE, DRY, UNIFORM
- IN ALL STANDARD CONTAINERS
- COAST-TO-COAST DISTRIBUTION

E. I. du Pont de Nemours & Co. (Inc.),
Electrochemicals Dept., Wilmington 98, Delaware.

DU PONT FOR QUALITY

DU PONT METHYL CHLORIDE

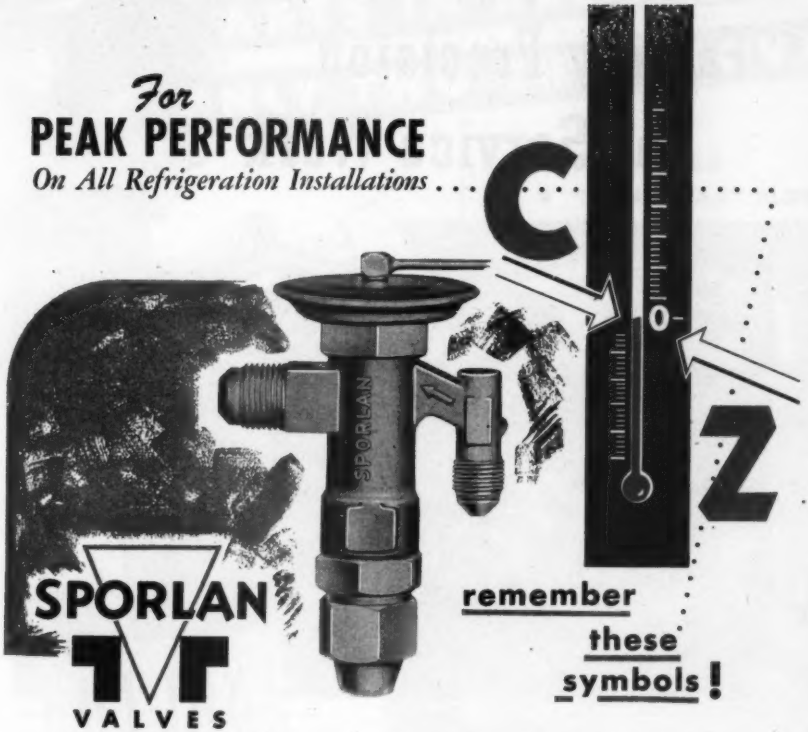
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT

For

PEAK PERFORMANCE

On All Refrigeration Installations . . .



SPORLAN VALVES

remember these symbols!

SPORLAN "C" CHARGE FOR SUCTION TEMPERATURES Above ZERO

SPORLAN "Z" CHARGE FOR SUCTION TEMPERATURES Below ZERO

Your Sporlan wholesaler stocks the full line of Thermostatic Expansion Valves with Selective Charges to meet any operating conditions. Always consult with him before ordering and be assured of peak performance on all installations.

Sporlan Manufactures

SOLENOID VALVES
SOLENOID PILOT CONTROLS
MODULATING PILOT CONTROLS
REFRIGERANT DISTRIBUTORS
STRAINERS, CATCH-ALLS
and the only
THERMOSTATIC EXPANSION VALVES
with SELECTIVE CHARGES

Use a Sporlan Catch-All on every job... The most Perfect Filter-Dehydrater ever developed!

SPORLAN VALVE COMPANY

3723 COMMONWEALTH AVENUE

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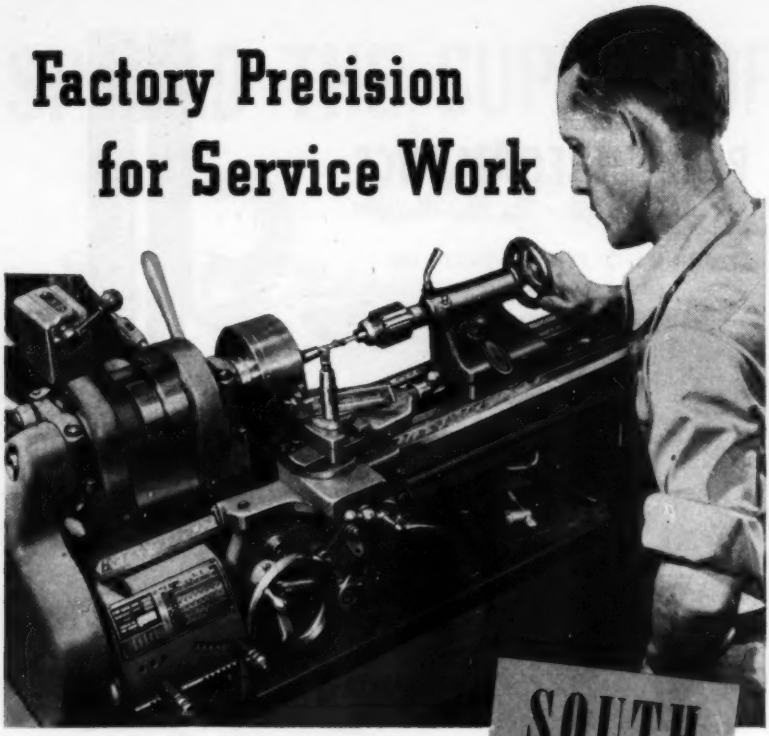
Factory Precision for Service Work



SOUTH BEND LATHES

South Bend Lathes deliver the same accurate, dependable performance on service work as they do on original parts manufacture. Urgently needed replacement parts can be made quickly, economically, and to original factory tolerances. Many old parts can be reconditioned to give extra service. More and better service jobs can be turned out in less time with this versatile machine tool—and with greater profit.

The prices of South Bend Lathes are only slightly higher than pre-war—and improvements developed to meet exacting war production requirements give you greater dollar value.

WRITE FOR THIS CATALOG

Describes South Bend Precision Toolroom and Quick Change Gear Lathes with 9" to 16" swings. Also, job-simplifying attachments, tools and accessories.

SOUTH BEND LATHE WORKS

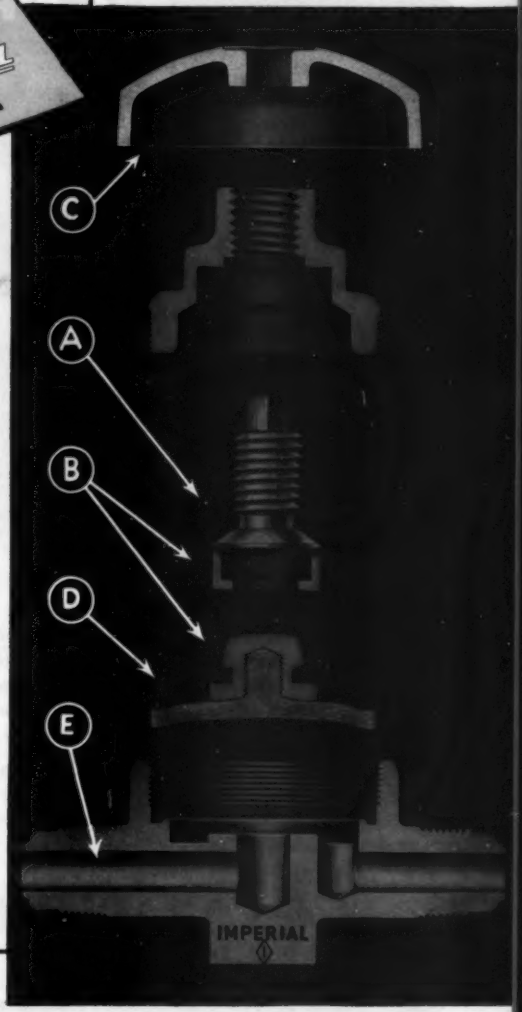
BUILDING BETTER LATHES SINCE 1906

529 EAST MADISON STREET • SOUTH BEND 22, INDIANA

5 PARTS IN ALL . . . ONLY TWO THAT MOVE

- NO SPRINGS
- "EITHER-WAY" FLOW

IMPERIAL DIASEAL VALVE



Talk about simplicity, the DiaSeal Valve is streamlined right down to five essential parts, *only two of which move* —to give unsurpassed performance throughout long life.

This simplicity of design, readily apparent in the illustration, incorporates features that make the DiaSeal the outstanding valve for refrigeration service:

A. **NO SPRINGS** — DiaSeal Valve cannot "stick shut" because diaphragm is lifted mechanically. Positive control with flow in either direction.

B. **ONLY TWO MOVING PARTS**—Simple construction assures greater dependability.

C. **EASY FINGER-TIP ACTION**—Quick, sure opening and closing with less than two turns of handle.

D. **LONG LIFE DIAPHRAGM** is impervious to all common refrigerants. In actual tests, has withstood over 1,000,000 openings and closings under refrigerant pressure.

E. **INLET AND OUTLET PORTS IN LINE.** Simplifies installation.

Both internal parts of the DiaSeal lift out with the bonnet, facilitating soldering in line. Extremely low height cuts installation space.

Furnished in 2-way and angle types, with either flare or solder connections. The Imperial Triple Seal Groove is an added feature on flare connections ⅜" and larger.

THE IMPERIAL BRASS MFG. CO.
534 S. Racine Ave., Chicago 7, Ill.

ASK FOR BULLETIN 103-REF

SEE YOUR JOBBER

IMPERIAL

FITTINGS • VALVES • FILTERS • DEHYDRATORS
FLOATS • CHARGING LINES • TOOLS FOR CUTTING, FLARING, BENDING, PINCH-OFF AND SWEDGING.

If you're one who recognizes quality in a motor starting capacitor you'll like Capacitrons. Because we build them to the same high standards as original equipment we supply to leading motor manufacturers, you get the rugged dependability needed to turn out profitable, trouble-free jobs.

You'll be pleased, too, with the easy, time-saving way in which Capacitrons mount. In most instances they slip right into place. When hardware is needed, you will find that Capacitron Engineers have anticipated the requirement—it being an easy matter to select the right adaptors for the job.

Your jobber will gladly give you a free copy of our handy new replacement guide for A.C. motor starting capacitors. If he doesn't have his supply yet, write us direct.

The CAPACITRON Company

849 N. KEDZIE AVENUE **CHICAGO 51, ILLINOIS**

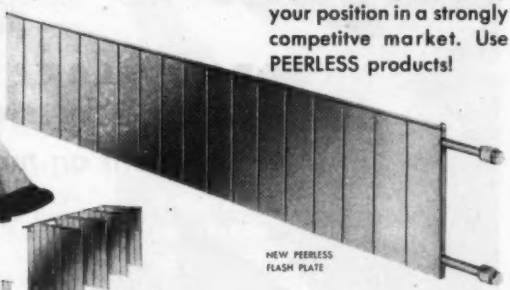
TELEPHONE VAN Buren 3322

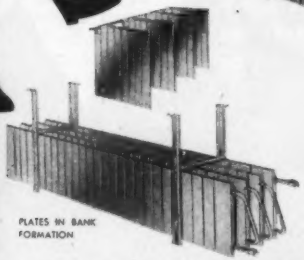
BUY CAPACITRONS THROUGH YOUR LOCAL JOBBER

Team up with . . .
PEERLESS

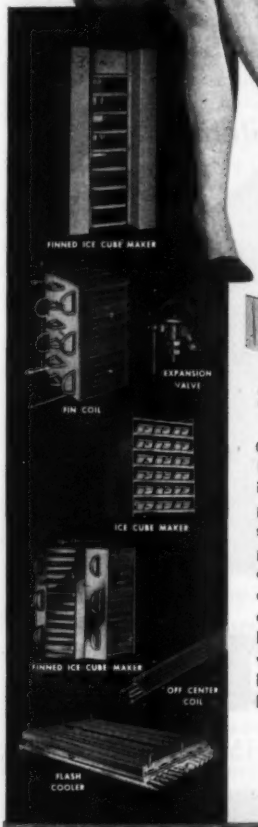
for efficient installations and profits

● PEERLESS is ready with a helping hand to give your installations efficiency—the way to fortify your position in a strongly competitve market. Use PEERLESS products!

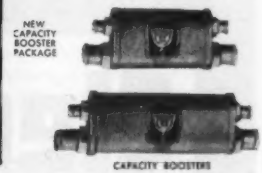




● PEERLESS FLASH PLATES are available NOW in QUANTITY for all low temperature applications such as locker plants, fixtures, domestic and commercial quick freezers, etc. Flat aluminum plates are mechanically bonded together by continuous copper or aluminum tubing. No joints — No leaks. Fast action! Low operating costs!



● Make a PEERLESS CAPACITY BOOSTER a part of every installation. New Model AA is precision engineered from seamless copper tubing with parallel connections throughout. Connections are brazed by a new leak-proof process. The exclusive PEERLESS THERMEK heat transfer surface is unrivaled. Models B and C, for larger installations, incorporate like basic design.



● Other PEERLESS products, illustrated at left, are designed to provide the highest degree of efficiency. The satisfaction your customers get NOW counts for future sales and profits — a solid reason for teaming up with PEERLESS.

SOLD THROUGH LEADING REFRIGERATION SUPPLY WHOLESALERS

PEERLESS OF AMERICA, Inc.

General Sales Offices . . . 7901 Lawrence Ave., Chicago 25, Illinois

ENGINEERED
to fit..
FORGED FLARE NUTS
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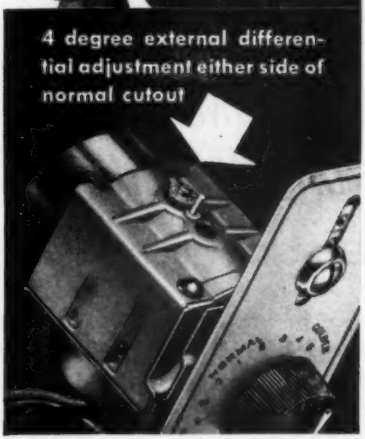
Prompt Shipment on most items
Electrimatic
2100 INDIANA AVE CHICAGO 16 ILLINOIS

ALL NEEDED CONTROLS

FOUND IN THE CUTLER-HAMMER REFRIGERATION REPLACEMENT LINE

Sixty percent of all refrigeration control replacement requirements are met by one Cutler-Hammer control alone . . . the *Universal* Replacement Unit. And where specific control is needed, that need is met by Exact Replacement control items in the C-H line, each individually packed, clearly labelled, complete with dial plate mounting screws, trim washers and full instructions for mounting and adjustment.

The practical advantages gained are: less capital tied up in stock; rapid and regular turnover; speedier completion of each job; greater all-round satisfaction. And in each C-H Replacement unit you will find the results of a 50-year specialization that had led to acknowledged leadership in the control field. Thus, outstanding refrigeration wholesalers recommend C-H Replacement Control and alert service organizations everywhere feature and use it. CUTLER-HAMMER, Inc., 1363 St. Paul Ave., Milwaukee 1, Wisconsin.



Bul. 9521N9 →

THIS ONE UNIVERSAL UNIT ALONE COVERS 60% OF ALL NEEDS

ADJUSTABLE MOUNTING BRACKETS

Maximum Mounting Centers **. . . . 4-3/16**

Minimum Mounting Centers **. 2-3/16**

Adjustable Cutout Feature—Differential can be increased 4 degrees by turning indicator in "Hi" direction and decreased 4 degrees by turning in "Lo" direction.

Adjustable Range—Turning screw clockwise lowers setting and counter-clockwise raises settings.

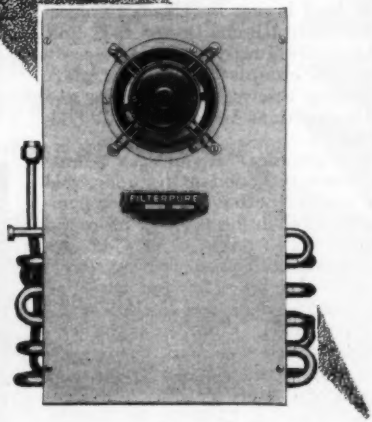
Operating knob can be adjusted to meet various evaporator scale settings. New knob is ideal for varying shield thicknesses. Makes *this* control adaptable to wider range of single dial replacement jobs where overload is not required in unit.

CUTLER-HAMMER
MOTOR CONTROL
C-H

DOMESTIC, SEMI-COMMERCIAL AND COMMERCIAL CONTROL

Filterpure

FOR BACK BARS
AND LIMITED SPACE APPLICATIONS



NOTHING LIKE IT
ON THE MARKET!

EXTREMELY COMPACT . . . Only 20" high, using a standard 5/8" tube 5-row deep coil.

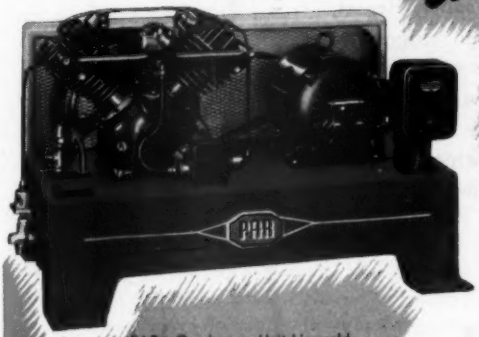
POSITIVE AIR CIRCULATION . . . Centrifugal Blower guarantees proper air movement.

MADE IN 2 SIZES . . . To balance 1/4 and 1/3 H.P. Compressors—Performance Plus!

Sold by Leading Refrigeration Wholesalers

BETZ CORPORATION
HAMMOND, INDIANA

CHECK the PAR EXTRAS and SEE the BIG DIFFERENCE



PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Equipment Wholesalers!

Year after year, new features, new improvements, new refinements, backed by engineering know-how, are added to the Par line. Today Par Refrigeration Equipment is tops in economy, efficiency and dependability. Check these Par Extras with your Par wholesaler, and see the big difference.

. . . By Comparison — You'll Buy PAR

Lynch Manufacturing Corporation

General Offices, Toledo 1 • Factory, Defiance, Ohio, U.S.A.

REFRIGERATION
SUPPLY DEPOT
Kelvinator
POINTS THE WAY
to the solution of
your supply problem
A network of 50 Kelvinator supply depots, each carrying a *complete* line of refrigeration parts and supplies, makes your where-to-buy-it problem easy. Strategically located throughout the country — there's one near you for over-the-counter service, or for prompt shipment upon receipt of your mail order.
Kelvinator
DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT
CONDENSING UNITS
REFRIGERATION PARTS AND
SUPPLIES
BUY KELVINATOR FOR ALL YOUR REFRIGERATION REQUIREMENTS

For Efficient Refrigeration Use Proved and Improved Controls

K-15

K-20

V-200

S-5-2

S-5-3

Here is efficient, unsurpassed refrigeration equipment. Specifically designed for the control of Freon, Sulphur-dioxide, Methyl-chloride and Ammonia. Also air, water, gas, light oil, etc. Suction lines or hi-pressure liquid lines.

K-15 and K-20 Series. Magnetic liquid and suction stops. The direct acting single seated needle valves and the piloted piston valves respectively. All valves are held open electrically, thus eliminating unnecessary compressor burdens. Tight shut-off for fractional tonnage installations. Features are Die-forged bodies, Hardened steel needles, Corrosion-proof internal parts, Gasketless construction, Integral mounting features, Moisture-proof high pressures. Single or dual voltage coils.

V-200 Thermal Expansion valve. Interchangeable Orifice Cartridges permit proper sizing on the job, making this literally six valves in one. Unmatched sensitivity, semi-liquid charged; may be placed in ambient temperatures higher or lower than bulb temperatures with no loss of control. Frictionless pusher-pin, ample diaphragm, plus balanced, low-rate adjusting spring. Carefully lapped hard-faced ball insures tight shut-off.

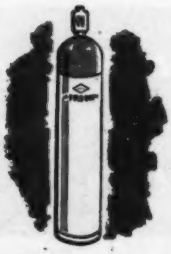
Strainers S-5 Series. The importance of suitable strainers ahead of a flow control device, such as automatic or regulating valves of any kind for long operating life, cannot be too heavily stressed. Bronze, iron or semi-steel bodies, Monel, reinforced bronze or felt screens, 3/16 to 120 strainer meshes.

For complete *specifications on these and other refrigerant controls in the broad General Controls line, write for the new 1946 Catalog 52C. Send request to your nearest Factory Branch, Distributor or Refrigeration Supply House.*

GENERAL CONTROLS

801 ALLEN AVENUE GLENDALE 1, CALIF.

31-1



WANTED NOW!

Empty "FREON" Cylinders

Users of "Freon" Safe Refrigerants are urgently requested to check all "Freon" cylinders on hand and to return empty cylinders at once—today, if possible!

Empties are badly needed to meet the greatly increased demand for "Freon."

Shortage of cylinders in which to ship "Freon" has resulted from reduced deliveries of new cylinders... due to scarcity of raw materials, chiefly steel. One way to bridge the emergency . . . continue meeting the tremendous demand for "Freon"... is to utilize every available "Freon" cylinder. So won't you *please* check all cylinders you have on hand and return the empties NOW.

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FREON

REG. U. S. PAT. OFF.

safe refrigerants

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To:_____

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Ship empty "Freon" cylinders via freight collect to:-

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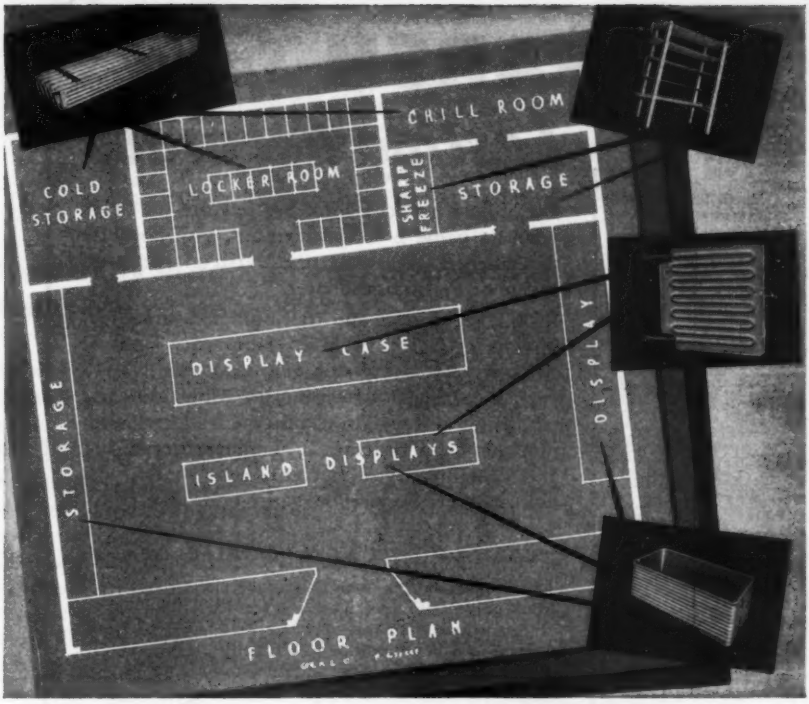

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Now you can reoperate those recessed flapper and piston valve seats yourself with this self-aligning Valve Grinding tool.

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THE new DFN Moisture Indicator tells instantly whether system is wet or dry. No need to shut down unit. Avoids moisture troubles in new installations; big time-saver diagnosing service failures in old systems. Demonstrated with great success to thousands at the All-Industry Show. Easily-assembled parts and cartridges packed in handy service kit. Ask your jobber—or write us for literature and prices.

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● Slightest moisture is indicated by change in color of chemical in glass cartridge. Base material of chemical is "Drierite", specially processed

* PAT. APPL'D FOR

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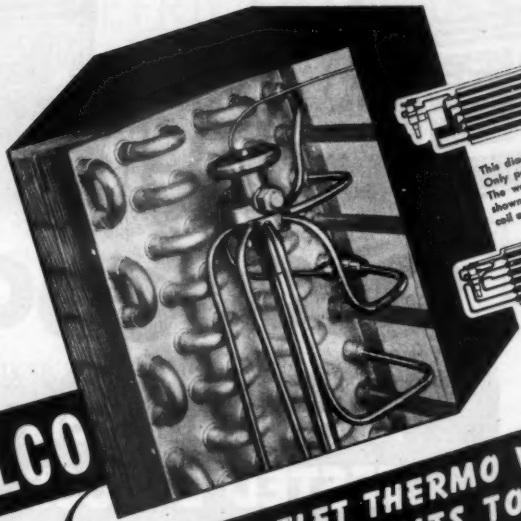

This diagram shows poor distribution. Only part of the coil is properly fed. The working portions of the coil are shown in black. "Loafing" parts of the coil are shown in white.

This is the same coil, fed by a Multi-Outlet Thermo Valve. Most of the coil is now doing real work. These valves increase coil capacity up to 25%.

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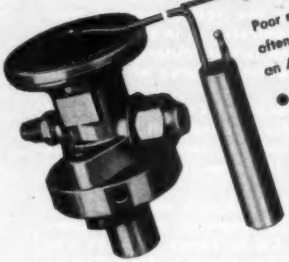

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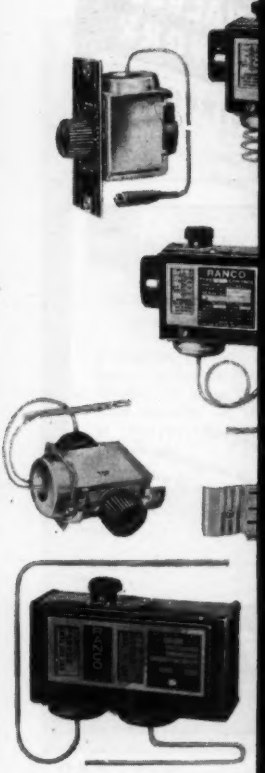

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Illustrated is Ranco 0-1534 — a standard temperature control with high pressure cut-out. Lowest cut-out is —20°. Cut-in range is —15° to 40°. High pressure cut-out range is from 110 to 250 lbs. As in all Type "O" Controls cut-out and cut-in adjustments are changed *together* by a turn of the control knob.

See your Jobber and write for Bulletin No. 1042 on Ranco Type "O" Commercial Controls.

Ranco Inc.

COLUMBUS 1, OHIO

THE REFRIGERATION SERVICE ENGINEER

The National Magazine of Refrigeration Sales, Service and Installation

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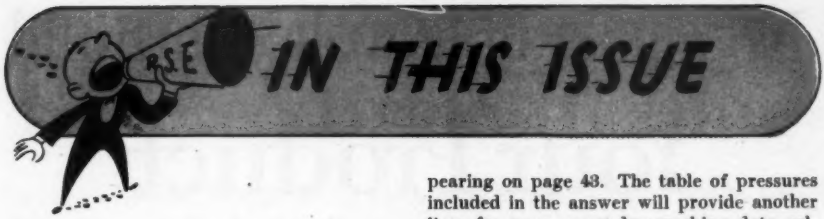

QUITE a large volume of thinking, talking and writing is being done the last few months on the subject of "Reverse Cycle Heating," with a promise of more to come. Perhaps it is because of the development and promotional activities of the electric utility companies, who see in it a promise of the future all electric home, and because of the natural interest of manufacturers and engineers of air conditioning equipment. Quite a number of experimental installations are already in use, mostly in the South and West Coast states. The latest installation, however, is now in operation in the home of an air conditioning engineer, Mr. E. H. Hammond of R. Cooper, Jr., Inc., Chicago, Ill. His home is in Berwyn, Ill. In this installation, well water at a temperature of 50 F. is used as the heat source. Various other heat sources can be used—but let Mr. Edward Dowis tell you about it in his article appearing on page 29.

THE third in the series on the "Construction, Operation and Servicing of the Coldspot Home and Farm Freezer" appears on page 34.

THE concluding article by F. Y. Carter on "Refrigerant Control for Low Temperature Systems" appears on page 38. The first article, appearing in the January issue, discussed the difficulties experienced in obtaining good refrigerant control in systems operating at temperatures below —40F.

THE article entitled "Charging and Starting Air Conditioning Systems," concluded in the January issue, drew some comment and question from our readers. These, together with the answers given by the authors of the article, provide some interesting information. They appear on page 41.

HOW much air pressure for a beer dispensing system is one of the questions of the question and answer department appearing on page 43. The table of pressures included in the answer will provide another item for your every day working data collection.

A WIRING diagram showing how to make connections when replacing a G.E. relay with a Delco relay, or vice versa, is a very useful service pointer appearing on page 45.

RSES News and Activities these past few months reflects the rapid growth, increased activities and widespread acceptance of the society. Membership is almost 8000, making it the largest society in the industry. 185 chapters, 10 state associations, and one interprovincial association, spread over 38 states and the Dominion of Canada, attest to its widespread acceptance. The kind of educational work engaged in by the society is increasing in scope and the meeting programs of chapters and state associations rising in value to members. Each month under the heading "New Chapters in the Making" can be found reports of groups meeting and forming a chapter in their locality, and each month in other news reports of the society can be found accounts of new programs and increased activity in the chapter meetings. It is an "up and coming" society that has by no means attained its full growth yet. "RSES News and Activities" this month appears on page 52.

COVER

THE R.S.E.S. Mile High Chapter annual tube bending contest is rapidly becoming the feature event of the year among service engineers in the area of Denver, Colorado. It is growing in size and interest with each succeeding year. Combined with a party, dancing and various entertaining features, it provides the nucleus of a very enjoyable get-together, amusing and entertaining to both ladies and men. This month's front cover is a view of the contest floor, taken while the contestants were hard at work. The complete story and additional views are on page 56.

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Opportunities in Reverse Cycle Heating

The Future Promises Applications in Which Every Refrigerator User Will Be Interested. Here Are the Principles Governing the Refrigeration Cycle for Heating.

BY EDWARD DOWIS

THE rapid strides which have been made in the development of refrigerating equipment and the ever widening scope of its application has overshadowed what may prove to be equally important; the use of the heating side of the cycle. Engineers in the refrigeration industry are aware of the possibilities in this field, both for localized heating applications and for the complete winter conditioning of homes and commercial establishments. Complete year around conditioners, using the compression cycle both for cooling and heating have been installed and package units are in, or ready for production.

The electric light and power companies are actively engaged in the promotion of activity in this field, going over specifications, considering commitments to purchase a large number of units so as to make quantity production profitable and encouraging research. It seems certain that the "Heat Pump," as it is called, may be used to pump heat into spaces or products where it is needed, as efficiently as it is being used to pump it out of refrigerated spaces. When it can be used to do both at the same time, it can be amazingly profitable.

As with refrigeration, some applications of the heat pump will be factory assembled units and others tailor made, engineered on the job. An understanding of the possibilities and economy of compression heating by all who are in the refrigeration service business will enable them to give sound advice on the application of the refrigeration cycle to any heating problem and utilization of the heat from refrigeration equipment.

Heat is required in residences and commercial buildings, chiefly for space heating and for hot water. Restaurants and similar places require heat for various purposes, much of which may be obtained from the condensers of present refrigeration equipment. This article deals primarily with the use of the heat pump for space cooling and heating and for hot water supply but the systems described may be applied to process heating.

Following are some very good reasons why the heat pump is a desirable and economical heat source:

1. The same equipment can be used for heating and cooling; consequently the investment may be less than for a separate summer conditioner and heating plant.
2. The cooling load for the average home or commercial establishment, and the winter heating load are usually about equal, so that condensing equipment which will properly cool a building in summer, is usually sufficient to provide heat in winter.
3. There is no combustion, consequently no smoke stack or chimney with their attendant losses.
4. The saving in space. No fuel storage, only one compact year around conditioner.
5. Cleanliness. No combustion; continuously filtered air.
6. Economy. It is on this basis that reverse cycle heating can, and will be sold.

There are many other reasons such as adaptability to automatic control, simplified maintenance, continuous readiness for use and ability to cool one space and heat another simultaneously.

Essentially, the heat pump is a machine which absorbs heat in one place and gives it up to another. Its source of heat is usually the air outside, well or city water

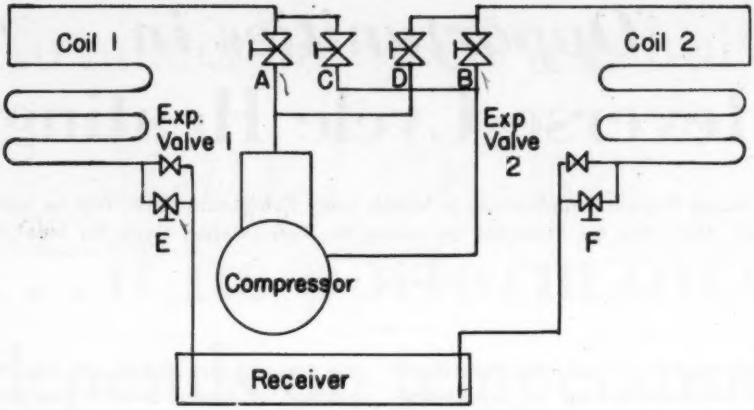


Fig. 1.—Reversing Refrigerant Flow.

or the earth or a combination of any or all three. It may be from any process in which heat is dissipated. The medium of exchange is a refrigerant.

Because reverse cycle heating and refrigeration may be called upon to add or remove heat from the same product or space at different times, provision is usually made for reversing the heat cycle. This can be accomplished in either of three ways:

1. By reversing the flow of refrigerant.
2. By leaving the refrigerant cycle undisturbed, but drawing air for the conditioned space over either the evaporator for cooling, or the condenser for heating.

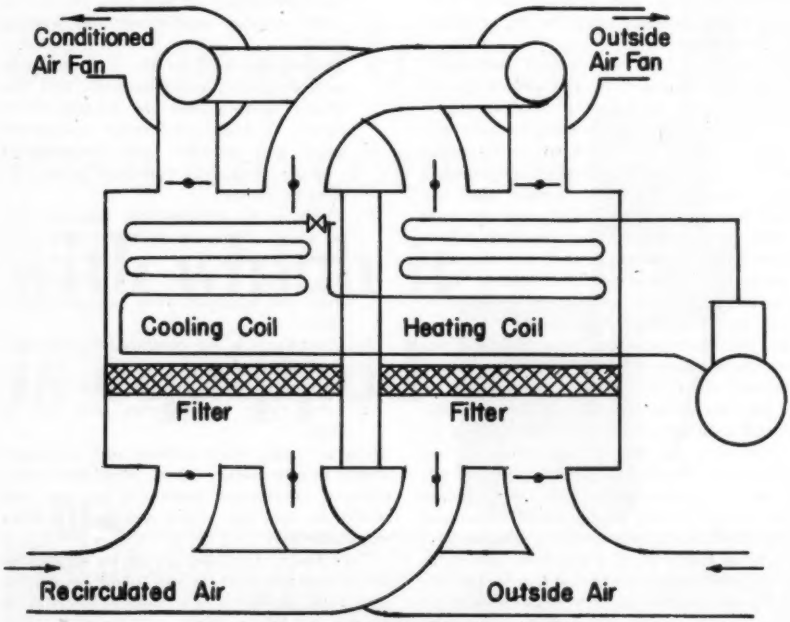


Fig. 2. Heating Cycle by Directing Air Flow.

3. By leaving both the air and refrigerant circuits undisturbed, but supplying either hot or cold liquid, as required, from heat exchangers where water is cooled or heated by the evaporator or condenser.

The method to be used for any particular job will be determined by how and where the heat and cooling are to be applied, and can be better understood by a brief explanation of each system.

Reversed Refrigerant Cycle

This system is most adaptable to refrigeration applications where it is desirable to alternately heat and cool products or containers in contact with refrigerant containing equipment. An example is a refrigerating system which is used to cool milk in transit, and sterilize the cans by keeping hot water in them on the return trip. A reverse cycle unit in the truck or trailer provides cooling by evaporating refrigerant in an evaporator in thermal contact with the cans, and a condenser outside the truck gives off the heat to the air. On the return trip, the outside coil is used as evaporator, picking up heat from the air, which is given up to the cans, through the inside coil, now being used as a condenser. Fig. 1 shows a simple method by which reversing refrigerant flow could be accomplished.

With valves A, B and E open and C, D and F closed, hot gas will flow from the compressor, be condensed in coil 1, which can be used as a heating coil. The condensed liquid will flow through valve E to a liquid receiver and from there through expansion valve 2 where it is reduced in pressure and evaporated in coil 2, taking up heat.

This process can be reversed by closing valves A, B and E and opening valves C, D and F. Now coil 2 will be a heating coil and coil 1, a cooling coil. The process can be reversed as often as desired by opening three valves and closing three others. With a system as illustrated, valves E and F merely by-pass the expansion valves on coils being used as condensers.

Directing Air Flow

Fig. 2 shows a method of reverse cycle cooling and heating commonly used for air

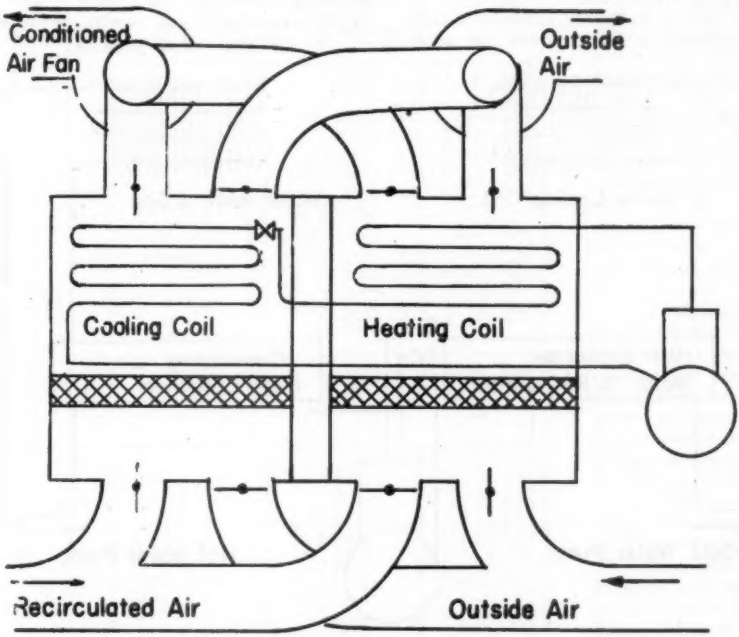


Fig. 3. Cooling Cycle by Directing Air Flow.

conditioning. The refrigerant cycle is not changed, consequently valves do not have to be distributed. The evaporator and condenser are each placed in a separate chamber and the air to be cooled or heated is passed over these coils. Two fans are used, one to deliver air to the conditioned spaces and the other to circulate air from outside. During the heating cycle, dampers are as indicated in Fig. 2. The outside air fan draws air through the outside air duct, over the evaporator coil, which must be maintained at a lower temperature than the air. It gives up heat to the coil and is discharged by fan. The heat taken from the air permits the refrigerant to evaporate. It is then taken by the compressor, raised to a pressure and temperature high enough that the heat will be transferred to the conditioned air which is being circulated over the condenser coil.

To change over to the cooling cycle, it is only necessary to reverse damper settings as indicated in Fig. 3. Now the outside air will be drawn over the condenser, remove heat and permit the refrigerant to condense. The conditioned air being circulated over the cooling coil will give up its heat to the evaporating refrigerant.

This system is readily adapted to automatic control, as the dampers can be operated by damper motors controlled by thermostats and the cycle reversed as requirements demand.

Liquid Heat Transfer Cycle

Larger installations usually use water or brine to carry the heat to and from evaporators, condensers, coils, etc. This permits installation of all major equipment in the machine room. Refrigerant is condensed in a refrigerant to water heat exchanger, where the water is heated, and transferred by pumps to wherever the heat is to be used. Evaporation takes place in a similar exchanger, and the chilled water taken to wherever refrigeration is needed. When used for cooling, the heated water is cooled by a cooling tower or similar equipment. When used for heating, the cold water is used to pick up heat from whatever source is available, as an outside cooling coil, well water heat exchanger, etc.

This system is also adaptable to automatic control. Either heated water from the condenser, or chilled water from the evaporator can be supplied to conditioning coils through automatically controlled valves. Heating in one zone and cooling in another at the same time, can readily be accom-

(Continued on page 74)

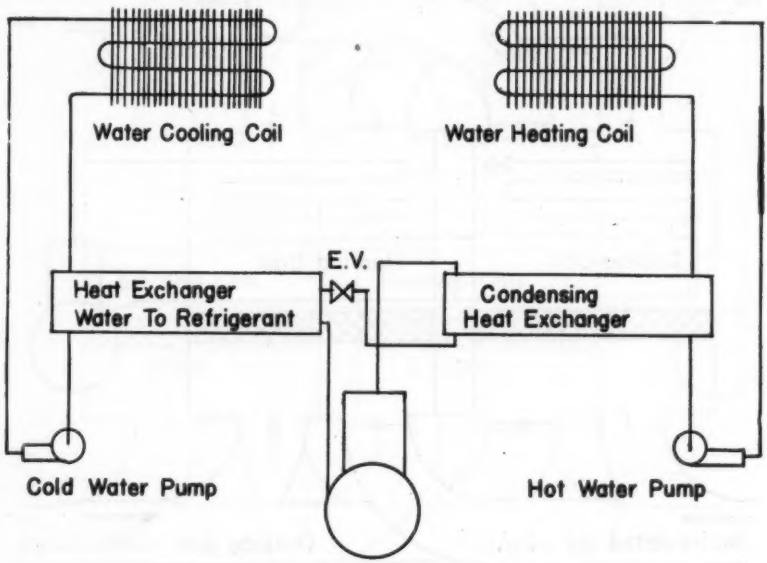


Fig. 4. Water Transfer Cycle.

Home and Farm Freezer Production

First, Second, and Third Quarters 1946

Size	Shipments of Complete Units: Total Number	Total Value (dollars)	Self-contained Units: Number	Self-contained Units: Value (dollars)	Remote Units: Number	Remote Units: Value (dollars)	Purchases of Components: Condensing Unit (number)	Compressor Unit (number)	Forced Air Evaporator (number)	Enclosure Only (number)	Total Purchase Value (dollars)	Number of Plants
FIRST QUARTER 1946												
TOTAL	23,161	5,309,451	21,972	4,931,809	1,189	377,642	22,053	2,479	27	120	1,370,168	93
Under 6 cubic feet 1/	1,585	202,714	1,465	202,714			2,145	35	-	-	106,337	17
6.1 to 8 cubic feet			3,487	476,068			2,745	957	-	-	140,523	19
8.1 to 12 cubic feet	14,720	2,971,725	5,398	1,084,037	146	1/40,670	4,743	449	-	-	255,047	28
12.1 to 15.9 cubic feet			5,789	1,120,990			5,882	17	27	21	375,108	35
16.0 to 20 cubic feet	4,742	1,299,329	4,153	1,163,913	589	135,416	4,188	752	-	81	300,013	23
Over 20 cubic feet	2,014	815,683	1,460	584,127	554	231,556	2,350	269	-	-	193,147	27
SECOND QUARTER 1946												
TOTAL	28,870	6,735,050	27,279	6,434,769	1,591	340,281	25,686	1,844	-	38	1,401,704	95
Under 6 cubic feet 1/	3,640	453,114	3,640	453,114	-	-	3,616	35	-	-	144,254	19
6.1 to 8 cubic feet			4,975	761,905			4,029	1,110	-	-	224,519	9
8.1 to 12 cubic feet	15,496	3,172,515	3,382	662,470	102	24,721	3,625	132	-	3	180,612	28
12.1 to 15.9 cubic feet			7,057	1,723,419			6,125	203	-	-	363,679	25
16.0 to 20 cubic feet	6,329	1,750,119	5,927	1,657,783	402	92,336	5,778	120	-	4	338,746	25
Over 20 cubic feet	3,405	1,359,302	2,318	936,078	1,087	423,224	2,513	244	-	-	209,894	28
THIRD QUARTER 1946												
TOTAL	49,627	10,031,246	47,967	9,435,249	1,660	596,077	38,830	5,047	280	506	2,749,980	94
Under 6 cubic feet 1/	13,790	1,459,889	13,790	1,459,889	-	-	9,277	860	12	-	140,744	19
6.1 to 8 cubic feet			9,774	1,523,222			5,398	2,418	68	-	307,200	11
8.1 to 12 cubic feet	28,458	5,844,564	8,450	1,817,372	559	73,472	7,299	998	-	5	477,385	31
12.1 to 15.9 cubic feet			9,875	2,430,781			8,435	430	-	9	544,482	34
16.0 to 20 cubic feet	3,998	1,274,401	3,828	1,221,043	170	53,360	3,615	304	200	208	530,477	20
Over 20 cubic feet	3,381	1,452,298	2,250	983,052	1,131	469,246	4,806	37	-	284	749,712	

1/ Combined to avoid disclosure of operations of individual companies.

FACTORY shipments of home and farm freezers increased 72 per cent during the third quarter of 1946, according to a report released today by the Bureau of the Census. Third quarter shipments amounted to almost 50 thousand freezers, valued at $10 million as compared with approximately 29 thousand units, valued at $6.7 million shipped during the second quarter of the year.

As in previous periods, nearly all the freezers shipped were self-contained.

While the shipments of self-contained freezers during the second quarter of 1946 were concentrated in the 12.1 to 15.9 cubic feet size, during the third quarter there was a shift to the under 6 cubic feet size group. This latter group, which had accounted for only 18 per cent of the total self-contained freezers during the second quarter, accounted for 28 per cent of the total during the third quarter.

It is estimated that the companies included in this report accounted for over 90 per cent of the total value of home and farm freezers shipped during the third quarter of 1946. Although reports were received from 155 companies on Form M52A, Part IV, Home and Farm Freezers, only 94 companies were active during the third quarter 1946.

Third Article

This series of articles on the Coldspot Freezer, taken by permission from the service manual issued by Sears Roebuck and Co. will describe in detail constructional features, operation data, test specifications and service information on the four models now being produced.

Construction, Operation Coldspot Home

Hermetically Sealed Motor—6 cu. ft.

THIS motor is a typical split phase motor with terminals, Spencer relay and Spencer Klixon overload mounted in the terminal box on the rear of the housing. The overload is responsive to both ambient temperature and excess currents. Occasionally, it may be necessary to enter the terminal box for the following operations:

Loose Connection—It is possible for a wire to break off at the terminal or to work loose and interrupt the circuit. To check for broken or loose connection:

a. Remove the fabric flue from the back of the cabinet.

b. Remove the terminal box cover (Fig. 8).

c. Note the following terminals:
Compressor cord to relay—"B"
Relay to running winding—"C" (in back of relay)
Relay to starting winding—"D"
Running winding—"E"
Starting winding—"F"
Common terminal—"G"
Overload device to compressor cord—"A"

d. Unplug service cord from outlet.

e. Check all screws and nuts to see that they are tight and all wires to see that none are broken.

Checking Electrical Circuit

Open Circuits—It might also happen that a wire is broken in the compressor cord or inside the housing. Since there are two circuits, one through relay and running winding and one through relay and starting winding, either or both may be "open." If both circuits are open, or if the circuit through the running winding only is open, the motor will be "dead" and no sound will come from it. If the circuit through the starting winding only is open, the motor will hum for a few seconds and the overload will trip. Within a minute or two, the overload will again close the circuit and again trip and repeat this as long as the power is applied to the unit. To check for an open circuit:

a. Make a test lamp.

b. Touch one of the bare wires to terminal "A" and the other to terminal "B". (Fig. 8). The lamp should light. If it does not, there is something wrong with the compressor cord (assuming the service and control cords, junction block and control have been found in good order).

c. If the lamp lights across terminals "A" and "B," next try it across terminals "A" and "C" (the one in back of the relay). If the lamp does not light, the relay coil is "open" and the relay must be replaced.

d. Next try the test lamp across terminals "A" and "D". This checks the circuit through the relay contact points. If the lamp does not light, the contact points are stuck open and the relay must be replaced.

e. Putting the lamp across terminals "A" and "E" and then "A" and "F" in turn, will check the wire connecting the winding terminals with the relay terminals. If the lamp lights, there is power up to the windings.

f. If the lamp shows power up to both winding terminals, next check the overload device. Place one wire of the test lamp on terminal "B" and the other wire on terminal

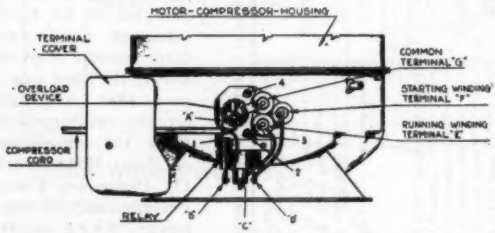
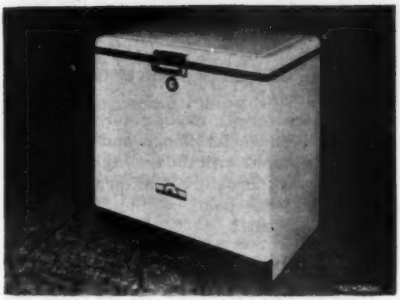


Fig. 8—Terminal cover of hermetic unit removed, showing the relay and wiring terminals.



and Servicing

and Farm Freezers

"G", and wait at least 5 minutes. The overload may have tripped and be open, and if so it would reset itself and complete the circuit within 5 minutes. If the lamp lights immediately and stays lighted continuously, the overload is all right and there is an open circuit in the motor windings and the unit will have to be replaced. If the lamp alternately lights and is put out by the overload tripping, there is a defect in the compressor or motor windings and the unit will have to be replaced. If the lamp does not light after 5 minutes, the overload is stuck open and will have to be replaced.

Replacing Relay

The relay consists of a magnetic coil which activates a movable contact point and completes a circuit through the starting winding. When the motor reaches a pre-determined speed, the magnetic coil releases the movable contact and takes the starting winding out of the circuit. The running winding is in the circuit as long as the cold control contact points are closed. The relay may prove defective as in the previous paragraph, or it could possibly stick in a closed position in which case the unit would operate on the overload device.

To replace the relay:

a. Unplug the service cord from outlet.

b. Remove terminal cover (Fig. 8).

c. Disconnect wires from terminals "B", "C" and "D".

d. Remove screws "1" and "2" which hold relay to bracket.

e. Install new relay in same manner as the one removed, replacing wires as in Fig. 8.

Replacing Overload—6 cu. ft.

To replace the overload device:

a. Unplug service cord from the outlet.

b. Remove terminal cover.

c. Disconnect wire from terminal "A" and copper connection from terminal "G". (Fig. 8).

d. Remove screws "3" and "4" and remove bracket.

e. Overload can then be removed and a new one installed.

Cold Controls

The control is provided with range and differential adjustments. However, as received from the manufacturer, the differential is already adjusted to the minmium and should not be changed. It should not be necessary to adjust the range, since a too cold or too warm freezer may more likely be due to some other cause. The adjustments are shown in Fig. 9. Clockwise rotation of the range adjustment lowers the range approximately 4° for each ½ turn. Clockwise rotation of the differential adjustment raises the cut-out point.

To replace the control:

Coldspot Home Freezers 10-14 Langpop

a. Unplug service cord from outlet.

b. Remove control knob. It is held on shaft either by friction or by a small set screw.

c. Pry off escutcheon. It is attached to the cabinet by friction fasteners on the back side.

d. Remove 2 screws holding control to cabinet.

e. Pull control out in open where terminal connections are accessible.

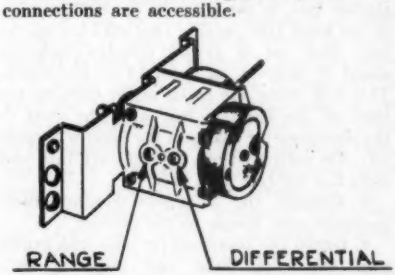


Fig. 9—Range and differential adjustments on the cold control.

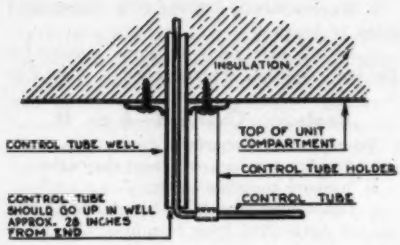

INSULATION
CONTROL TUBE WELL
TOP OF UNIT COMPARTMENT
CONTROL TUBE HOLDER
CONTROL TUBE
CONTROL TUBE SHOULD GO UP IN WELL APPROX. 28 INCHES FROM END

Fig. 10—The cold control well.

f. Remove terminal cover and remove wires.

g. The control has a small tube attached to it, the end of which is inserted in a well projecting down through the top of the unit compartment (Fig. 10). Before pulling the tube out of the well, mark the tube with a piece of tape, or otherwise, even with the bottom of the well so that you will know how far to push the tube of the new control up into the well. The tube should be pushed into the well 28 inches, or until it "bottoms." A metal clip is bent around the tube to hold it in place.

h. Connect the wires to the new control and install control, escutcheon and knob.

(On the 6 cu. ft. model remove the grill in the toe space and reach up from the bottom to get at the control easily.)

Replacing Temperature Indicator

The temperature indicator may lose its gas charge in which case the pointer will be inactive. Before condemning it, check the temperature near the center of the storage compartment with a good glass stem thermometer.

To replace the temperature indicator:

a. Put the point of a screw driver, or similar tool, in the notch in the bottom edge of the bezel (the outside ring with the marking) and jar it gently counter-clockwise about 60 degrees, or from 12 to 10 o'clock. This will bring the small metal tabs on the back of the bezel in line with the slots in the thermometer case and the bezel will come off. Do not pry it off; shift it until tabs and slots line up (see Fig. 11).

b. Remove the 3 screws holding thermometer case flange to the cabinet.

c. Grasp the thermometer case and gently pull the case, tube and sensitive bulb through the hole in the cabinet.

d. Remove all sealing material from cabinet and thermometer case and spread evenly all around the back side of the new thermometer case flange.

e. Install the new thermometer being careful to push the sensitive bulb in the well until it "bottoms."

f. Replace screws making sure the joint between thermometer flange and cabinet is thoroughly sealed with the sealing compound. If not sealed, moisture will penetrate the insulation at this point.

g. Replace bezel.

Replacing Door Gasket

Door gaskets ordinarily last for years, but occasionally one may need to be replaced. Proceed as follows:

a. Remove door as previously explained.

b. Lay the door upside down on a padded surface and remove the screws under the loose flap of the gasket, holding the plastic inner door pan to the metal exterior door panel.

c. Remove inner door panel and gasket.

d. Fit the new gasket to the inner door panel, trimming the ends, if necessary, to make a tight joint.

e. Replace inner door panel making sure gasket is uniformly clamped under the panel edge.

Note: In reassembling the door be careful to keep it flat and avoid putting a twist, or warp, in the door.

Replacing Latch Handle

Should the latch handle require replacing:

a. Remove door as previously explained.

b. Remove inner door panel and gasket.

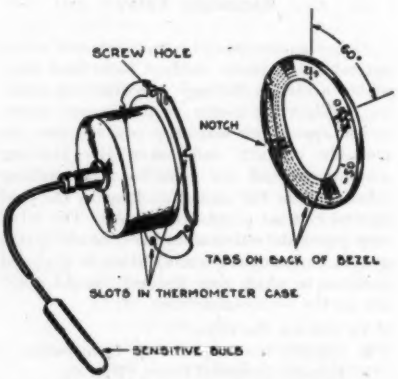


Fig. 11—The temperature indicator and method of removing bezel.

c. Push insulation aside and remove screws holding latch handle to door panel.

d. Install new handle and reassemble door.

e. Adjust to get proper gasket seal.

Replacing Hinge Spring

Should a hinge spring break or take a permanent set, the door would lose its balance. By loosening the screws in the lower part of the hinge, it could be determined which had failed, by the lack of tension on the hinge. (Note: Only one of the hinges on the small door of the 18 cu. ft. model has a spring).

a. Remove the screws from the lower part of the hinge in which the spring has failed.

b. Raise the hinge and remove spring.

c. Hook one end of the new spring over the pin in the upper part of the hinge and with a pair of pliers pull the free end of the spring down and hook it over the pin in the lower part (Fig. 12).

d. Open the door and replace screws holding hinge to cabinet and adjust to get proper gasket seal.

Operating Pressures

Low-side or suction pressures, for the most part, are dependent on the transfer of heat from cabinet air, or load, to the refrigerant coils. By the use of the thermal-mastic, this transfer has been made unusually efficient, so that an average temperature difference of from 2° to 5° is maintained. This means that with a zero degree cabinet or load, the temperature of the coils will average from —2° to —5°. At the end of the "off" period, the temperature of the coil will be about zero, and will reduce to about —10° at the end of the "on" period. For all practical purposes, with a zero degree cabinet or load, the suction pressures to be expected are:

at "on"—8 to 10 psi.
at "off"—2 to 4 psi.

High-side or head pressures depend on room temperature, suction pressure, and air circulation through the condenser. With normal suction pressure and adequate air circulation, the following rule-of-thumb method can be used to check high-side pressure.

a. For forced draft condensers, add 15° to the room temperature, and for this value, check the corresponding pressure on a "Freon" temperature pressure table or curve.

b. For natural draft condenser, add 25° to the room temperature and check on the table or curve.

Example: Forced draft condenser, 100° room

$$100° + 15° = 115°$$

From tables, the corresponding pressure is given as 146.3 lbs.

Shortage of Refrigerant

6 cu. ft. model—The proper charge in this unit will maintain saturation temperatures in all the effective coil surface, the coil in contact with the liner. A shortage of refrigerant will be indicated by:

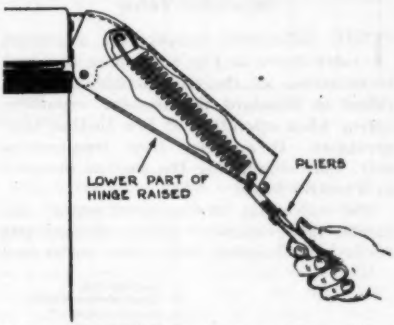


Fig. 12—Method used in replacing hinge spring.

a. The temperature indicator will move out of the zero zone to a colder position, and as more refrigerant is lost, it will move back to a warm position.

b. The running time will increase and may become continuous.

c. The frost will migrate from warmer to colder surfaces. It will leave the right hand end, then the front, then the left hand end, and finally the rear.

d. High and low side pressure will be lower than normal. If the unit is short of refrigerant it will have to be recharged.

9, 12 and 18 cu. ft. models—It is only necessary to have sufficient charge in these models so that when the coil is satisfied there is a slight excess of liquid refrigerant to keep the bottom of the pick-up tube in the receiver submerged. When the liquid level in the receiver drops below the pick-up tube, gas will be delivered to the expansion valve instead of liquid. This is evidenced by:

a. The temperature indicator will move out of the zero zone to a warmer position.

b. The running time will increase.

c. The frost will migrate, leaving the rear wall first, then the left hand end, front and right hand end.

Refrigerant Control for Low Temperature Systems

(Continued from the January issue.)

By F. Y. CARTER*

The Differential Temperature Expansion Valve

THE differential temperature expansion valve shown in Fig. 6 has been designed to overcome all the objectionable features found in standard thermostatic expansion valves when operating at low suction temperatures. It operates from temperature only, thus eliminating the suction pressure as a motive force.

The valve has two opposed power elements, the evaporator power element (its feeler bulb clamping to the valve outlet feed line and in effect feeling the suction pressure); and the superheat power element (its feeler bulb clamping to the suction line at the evaporator outlet in the same manner as the feeler bulb on the conventional type thermostatic expansion valve). The difference in temperature between these two bulb locations (superheat) governs the flow of refrigerant through the valve to keep the evaporator fully refrigerated during compressor operation.

Both power elements are charged with ethane, a very high pressure refrigerant, and at temperatures as low as —100° F. the

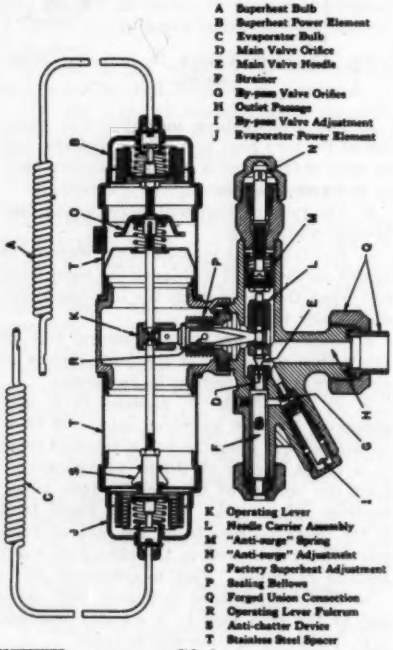


FIG. 5

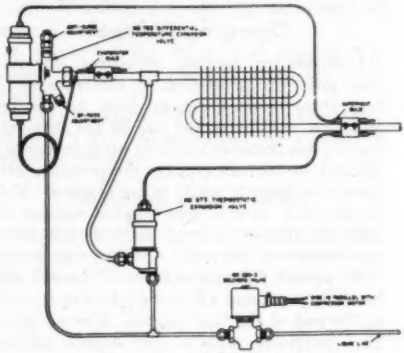


FIG. 6

power element pressure will change almost 1 lb. per sq. in. for each 1° F. feeler bulb temperature change. Thus a differential temperature valve comparable in size to the valve shown in Fig. 4 and equipped with the same size bellows would give full rated needle opening with slightly more than 3° increase in differential temperature when operating at a suction temperature of —100° F.

This allows the use of a relatively small orifice with the needle working far off the seat, and minimizes the likelihood of moisture, dirt or wax plugging the orifice. The application of a small orifice with the needle moving through a relatively large distance

* *Detroit Lubricator Company. Paper presented before the RSES Illinois State Assn. annual meeting in Chicago.*

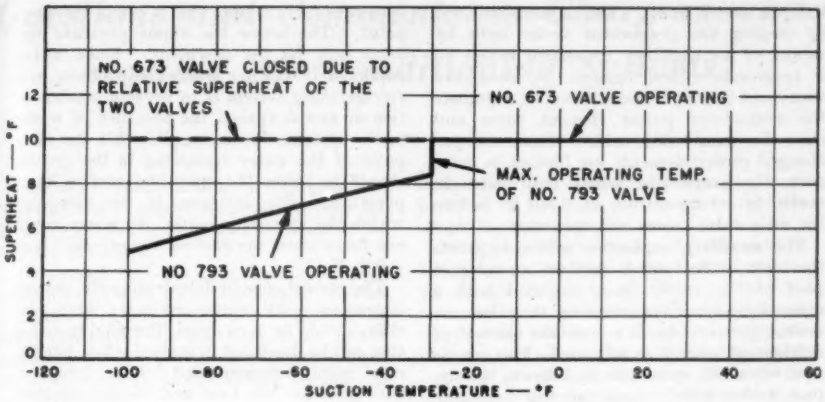


FIG. 7

also results in smoother metering. The small orifice because of its limited capacity, also eliminates surging during pulldowns.

Capacity ratings on the differential temperature valve are as high as 1.75 tons on F-12 and 2.5 tons on F-22 at —105° F. suction temperature, and are correspondingly higher at higher suction temperatures where the pressure-temperature change ratio becomes greater.

The differential temperature expansion valve, since it is not affected by the suction pressure of the refrigerating system on which it is installed, can be applied universally.

Gas-Charging Limitations

Ethane, the charging medium for both power elements has a saturation pressure at room temperature which even the strongest bellows will not stand. Therefore, the maximum pressure at which the power elements can be charged with ethane is limited. In the case of the valve discussed here the maximum allowable pressure with a nominal safety factor in the weakest of the two bellows is 160 lb. per sq. in., which allows the valve to open only after the temperature of the evaporator bulb is lowered to —30° F. This maximum opening temperature is satisfactory on low temperature holding applications where the pulldown time is not important. Where the pulldown time is important, such as in stratosphere chambers, successful operation has been obtained by connecting a standard thermostatic expansion valve in parallel with the differential temperature valve as shown in Fig. 6.

This extra valve feeds refrigerant at suction temperatures above the maximum operating temperature of the differential temperature valve and should be adjusted for a superheat higher than that of the differential temperature valve. By applying the valves in this manner the standard thermostatic valve automatically removes itself from operation once the suction temperature has been reduced to —30° F. and the differential temperature valve begins feeding. Fig. 7 illustrates how the system superheat will appear over the entire range from pulldown to balance temperature.

If the power element themselves become colder than their feeler bulbs, the valve will lose control. Therefore, if possible, the valve should be installed outside the refrigerated space.

Self-Starting Feature

The differential temperature expansion valve opens and feeds refrigerant through the main orifice only when the superheat feeler bulb is warmer than the evaporator feeler bulb by an amount equal at least to the differential setting. If the valve is set to operate with a 10° F. difference in bulb temperatures it will feed when the temperature difference is 10° F. or more. When the temperature difference between the bulbs is less than 10° F. the main valve needle remains closed. This latter condition always occurs when the equipment is being started up after a shutdown period.

It is apparent that the valve could never start feeding unless some means were taken to create a temperature difference between

the two feeler bulbs. This is accomplished by cooling the evaporator feeler bulb by means of an auxiliary expansion orifice to a temperature low enough to allow the superheat power element force to overcome the evaporator power element force and open the main valve orifice. Since the gas charged power elements are limited in pressure, the evaporator feeler bulb must be cooled to a temperature of —30° F. before the main valve comes into operation.

The auxiliary expansion orifice bypasses the main orifice and is built as an integral part of the valve. It is supplied with a manually adjustable metering stem but remains open and feeds a constant amount of refrigerant once it is adjusted. This means that when the system is shut down, the bypass orifice will be open and will feed even though the two feeler bulbs equalize in temperature and close the main orifice. It is therefore imperative that a solenoid valve be used to close the main liquid line when the unit ceases to operate.

Refrigerant Distributors

To eliminate pressure drop and insure a low average evaporator temperature multiple pass coils are used on systems of any appreciable size. The loading per pass is usually very low, probably 800 to 1000 Btu, and the use of pressure type distributors becomes hazardous. Due to very small orifices necessary for proper distribution this type distributor is very susceptible to dirt, moisture and wax on extremely low temperature systems. In addition an external equalizer type of valve is required and these are usually slightly more sluggish when operating at extremely low temperature.

The most successful distribution at low temperatures has been obtained by the weir or overflow distributor shown in Fig. 8. The level of the liquid refrigerant in chamber A rises to the metering orifice B while the flash gas passes through the open ends of the distributor tubes. The passages of the flash gas through the tubes gives an aspirator or suction effect and equal amounts of liquid refrigerant are metered into each pass. There is no pressure drop through this type distributor and an internally equalized, or what is called a standard expansion valve, can be used.

The atmosphere is a mixture of dry air and low pressure water vapor. The pressure of the water vapor is a variable and for each pressure there is a temperature at which saturation is reached and the vapor condenses to form liquid. This is called the dewpoint. The lower the vapor pressure the lower will be the dewpoint. Since water vapor itself will not freeze the problem in a refrigerating system is to prevent condensation or guard against the presence of water in the system. To accomplish this the dewpoint of the water remaining in the system should be below the operating suction temperature. For instance, if the dewpoint within the system is —100° F. water could not form when the suction temperature was —90° F.

The utmost care in dehydrating the system is necessary. All component parts, when possible, should be oven dried. The final installation can be dried out in several ways, but the most highly recommended for low temperature jobs are the heat and vacuum method with infra-red lamps, and the vacuum indicator or double evacuation method.

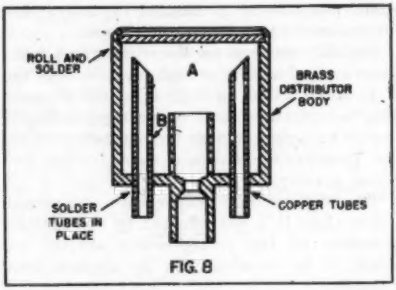


FIG. 8

Water is soluble to a certain extent in refrigerants also. The commercial limits of Freon-12, for instance, allows a dewpoint of from —10° to —40° F. Therefore, below these temperatures water may possibly condense from the refrigerant put into the system. The use of a permanent drier is the only safeguard against this condition.

The Oil Problem

Wax formation at the expansion valve was a serious problem early in the history of low temperature refrigeration. This was first encountered by the writer on a Freon-22 system operating at —76° C. The valves became restricted and an examination showed them to be filled with a wax resembling parafin. It was soluble in gasoline so the procedure for weeks was to remove valves and wash them internally with gasoline. After four or five washings the system was free of wax and gave no more trouble.

(Concluded on page 74)

Questions and Comments on Charging and Starting Air Conditioning Systems

COMMENT: In the article on Charging and Starting Air Conditioning Systems, page 33, December, 1946, issue of THE REFRIGERATION SERVICE ENGINEER.

Paragraph "E"—"Set all thermostats to a control point well above the temperature of the places in which they are located. (The main contractor on the compressor motor should again assume the open position since the control system is now calling for heating or no cooling)."

This statement is contradictory, for when your thermostats are set for high temperature then the system is calling for cooling.

The above paragraph should read: Set all thermostats to a control point well *below* the temperature of the places in which they are placed, etc.

The same thing again in paragraph "F"—"When the control for the zone being checked is operating properly, reset the control point of the thermostat of the zone to a point well *above* the temperature of the zone in which the thermostat is placed."

This should read well *below* the temperature of the zone.

My experience in testing zone cooling controls is to place all thermostats at a high temperature reading, so as to be in the open circuit position. Then at the zone being tested, operate the thermostat by hand, moving gradually to a cooler setting and note the results on your different controls, such as solenoids, motor controls, and fan controls when used. Your compressor motor being disconnected at the motor terminals. *Signed —E. J. FORD.*

ANSWER: We say, "Set all thermostats to a *control point* well above the temperature of the places in which they are located." We presume that the thermostat operates the refrigerant cycle on a *rise* in temperature. Our objective at this point in the check is to assure that no control operates the compressor except the one that we "carefully move the control point . . . to positions . . . well *below* the temperature of the area in which it is located. . . ." Naturally, when we move the *control point* on the thermostat to a point *below* the ambient temperature the compressor will operate because the temperature of the room will be above that for which the thermostat is set.

To use specific examples: If the ambient temperature in all the zones is 80 F and, in accordance with (e) page 33, we set the control points of all thermostats at 90 F all thermostats will be in the open circuit position, the controls will be calling for "no cooling," and the main contactor on the compressor motor starter will be in the open position.

If we now move the control point of *one* of the thermostats to 70 F (the ambient is still 80 F), it will assume the closed circuit position which will close the main contactor on the compressor motor starter. If this happens, we know that *one* thermostat is operating properly. If not, we know that either the thermostat or the motor starter is defective.

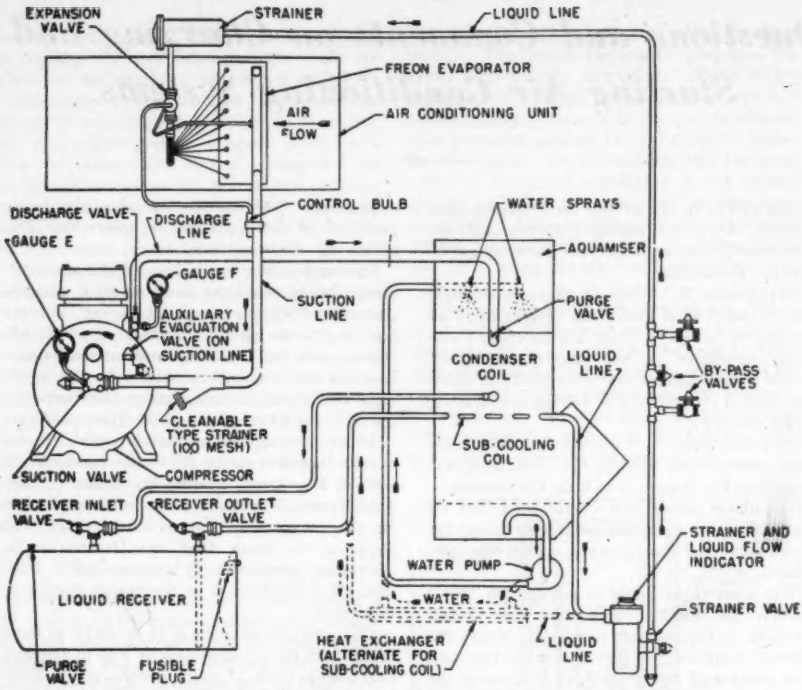
Our procedures appear to us to be in harmony with those suggested by you in the last two paragraphs of your letter.—*J. N. Calhoun, Westinghouse Electric Corp., Sturtevant Div.*

Circuit Explained

QUESTION: In the December issue of "Refrigeration Service Engineer," pages 31 to 35, you have illustrated an air conditioning installation and also schematic drawing of same. It is a very good drawing, and well illustrated. I have studied refrigeration and air conditioning some, being a graduate of U. E. I. Institute and am also working at the trade, but after careful examination of the schematic in Fig. 3 and 4, I am at quite a loss to understand just how this system can work. If you will look at your drawing while I am trying to explain what I mean, perhaps you can make it more clear for me.

In your drawing you will find the hot line gas going from the compressor head manifold directly to the inlet of the evaporative condenser which is OK, but it also tees off and goes to the inlet of the liquid receiver. Also, the discharge line from the evaporative condenser tees off going to the receiver outlet valve and also liquid line strainer and flow indicator.

I wish you would be kind enough to give me an explanation on this, for in all good reasoning I can't figure how it can operate under a set-up of this kind.—*Wm. R. Moore.*



Refrigeration System with Aquamiser and Sub-cooling Coil or Water Heat Exchanger.

ANSWER: The system pictured in Fig. 1 and diagramed on Fig. 3 and 4 includes a critically charged aquamiser (evaporative condenser). This system was picked for our discussion because it is often improperly charged.

After the refrigerant has been condensed by an aquamiser any further removal of heat from the liquid refrigerant produces sub-cooling. Some form of sub-cooling is generally necessary in a system including an evaporative condenser, except where the aquamiser and liquid receiver are placed some twenty feet or more above the level of the evaporator, such as when the aquamiser and liquid receiver are installed on the roof. In this special case, sufficient sub-cooling is obtained by the increase of pressure at the expansion valve caused by the head of liquid refrigerant above it.

Three commonly used arrangements for obtaining sub-cooling are:

Critically Charged Arrangement.—In this arrangement, the liquid receiver is isolated from the refrigerant circuit, by closing the receiver inlet and outlet valves, and just enough refrigerant charge is placed in the system to maintain liquid in the last pass of the condenser coil for sub-cooling. (See Figures 3 and 4 of the article.)

Sub-Cooling Coil Arrangement.—In this type installation liquid refrigerant is drawn from the bottom of the liquid receiver and passed through a separate sub-cooling coil located in the aquamiser below the condenser.

Water Heat Exchanger Arrangement.—In this arrangement, the liquid refrigerant is drawn from the bottom of the liquid receiver as in the sub-cooling coil installation but, instead of again passing the refrigerant through the aquamiser, sub-cooling is achieved by passing it through an externally located water heat exchanger through which sump water is circulated.—*J. N. Calhoun, Westinghouse Electric Corp., Sturtevant Div.*

S S S

THE refrigeration and air conditioning industry has the capacity to produce twice the volume of equipment manufactured before the war. Sales indicate a greater growth in the next five years.

QUESTIONS and ANSWERS

On Problems of Servicing and Installation of Refrigerating Equipment—Send Your Problems to the Question Box.

WHAT SIZE UNIT?

QUESTION 780: Owing to the shortage of high sides, I am receiving a few deep freezers minus the units. One of them will be a 12.5 cu. ft. freezer.

I have on hand an old style R-2 cylinder Frigidaire compressor which was used in a domestic box. Charge was sulphur. Last winter this compressor was completely overhauled at the factory and has not been used since. I am thinking of converting same to "Freon" and using it for the deep freezer. It will arrive dehydrated with expansion valve and cold control. All I think will be necessary, then, is to change oil in compressor for "Freon" and increase seal tension to about 75 lbs. pressure.

The new receiver I have on hand is 4" x 20", capacity is approximately 8 lbs. S.O., also a new condenser 12" x 17", single row. It has 8 rows of ½" steel tubes across. Motor is ¼ hp. Do you think this setup will be satisfactory? Any correction will be greatly appreciated.

ANSWER: A ¼ hp. condensing unit should handle a 12.5 cubic foot freezer quite nicely, providing the freezer is well constructed and properly insulated.

I note that you say the condensing unit you have was equipped with ¼ hp. unit, and that you plan on changing it from SO_2 to "Freon." If this change is to be made you will be increasing the capacity of this unit by more than half its present capacity. This, in turn, will necessitate an increase in motor size, or if you wish to maintain the same capacity as at present, it will necessitate a reduction in speed of about one-half.

If the unit is to be maintained at its present speed with the change of refrigerant and an increase in motor size, I think it would be also necessary to increase the condenser size and I would suggest, in this event, that another condenser of equal size be placed alongside the one on the machine at present, and the two connected in parallel.

Actually, I think it would be better to reduce the speed of the compressor in order to maintain the same capacity as at present and use a ¼ hp. motor. This should be sufficient to handle this size freezer.

BEER DISPENSING

QUESTION 781: Lately I have been working on several beer-dispensing systems consisting of the following equipment: a pre-cooler held at 38° F. and a sweet-water bath in the dispenser also refrigerated and held at 40° F. I would appreciate it if you could answer the following questions and give me any other information you may have on this subject: A—What is the resistance per foot of ¼" and ⅜" block tin tubing? B—The resistance of a 25-foot coil? C—Does any chemical reaction take place between block tin and copper tubing in a duct? D—In a sweet-water bath? E—How is the air pressure, to force beer through the lines and prevent the beer from being "hard" or "fluffy," calculated?

ANSWER: In order to determine the resistance through any length of tubing it is necessary to know more than you have told me in your letter. However, here is the formula for determining resistance, which you can use to work out the answer to your first two questions.

Pressure drop per 100 feet=

$$.000336\frac{FW^2}{PD^5} = .0216\frac{FG^2P}{D^5} = .000086\frac{FV^2P}{D}$$

Where:

W=Quanity of fluid flowing in lbs. per hour.

G=Quantity of fluid flowing in gal. per minute.

V=Velocity of flow in ft. per minute.

P=Density—lbs. per cu. ft.

D=Diameter of pipe in inches.

$$F=\frac{64}{Re}$$

$$Re=\frac{6.31\,W}{ZD}=\frac{5.05\,GP}{ZD}=\frac{2.067\,DVP}{Z}$$

Z=Viscosity-Centipoises.

So far as I know there is no chemical reaction between block tin and copper tubing in a duct or sweet-water bath. However, electrolysis may attack both, causing the outer surface to pit and eventually leak.

Pressure on beer is dependent not only on the height the beer is to be lifted, but also on the temperature of the beer, its carbonic content and the pressure required to keep the CO_2 gas in solution. A very fine discussion on this subject was contained in the October 1941 issue of THE REFRIGERATION SERVICE ENGINEER.

The following table will give you the recommended pressures under various conditions for beer:

PRESSURE REQUIRED TO KEEP CO_2 GAS IN SOLUTION IN VARIOUS BEERS

Beer Temperature °F.	Gage Pressure Lbs. Per Sq. In. Beer of 6% Alcohol Gas Content in Volumes		Beer of 3.75% Alcohol Gas Content in Volumes	
	2.5	3.0	2.5	3.0
35	9.0	13.5	7.5	12.0
40	11.0	17.0	10.0	15.0
45	14.0	20.0	12.0	18.0
50	16.5	23.5	15.0	21.5
55	19.0	27.0	17.5	25.0
60	22.0	30.5	20.5	28.5
65	25.0	34.0	23.0	32.0
70	28.0	38.0	26.5	35.0
75	31.5	41.5	30.0	39.0
80	34.5	45.0	33.0	42.0
85	37.0	48.0	35.5	45.0
90	40.0	51.0	38.0	48.0
95	42.5	54.0	41.0	50.5

Note: Gas content is expressed at atmospheric pressure and 32°F. Add 0.5 lb. for each foot the beer is to be elevated.

S S S

COIL FOR DISPLAY CASE

QUESTION 782: I have run across a job which the owner wants fixed so he gets more refrigeration. The layout is as indicated in the sketch. He has tried unit coolers without success. I recommended he use coils on the top which I think will work, but I don't know what size it should be. The unit is a G.E. ⅓ —CM364c.

On another job the owner wants the unit moved down in his basement, and it gets to be 32° to 0° down there. I am afraid the low pressure switch will not work after it is in the basement in the winter. The refrigerant is SO_2. My problem is whether or not I should put the unit in the basement and if I do should the low pressure switch be used or should I use a temperature control?

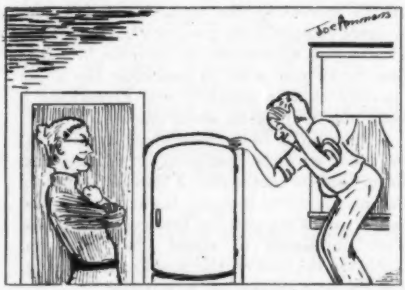
ANSWER: If I understand your sketch correctly, the display case you have in mind is a combination display and storage case in which the refrigerator coil is installed in the storage space. This type of display case is designed to provide refrigeration to the bottom of the display pans only, and not in the area above the display pans to any extent.

The only method in which you can properly refrigerate the top area is by the use of a forced circulation coil, or by the use of fin coils in the top of the display case. If you are to use a forced circulation or a blow type coil, it would be necessary to arrange an air chute extending from the top of the case down to the coil at the bottom—this in order to assure re-circulation of the air through both upper and lower sections.

If you use a fin coil in the top of the case you must bear in mind that this coil will carry the greater part of the load because through natural circulation, all warm air rises to the top, and the cooler air will remain in the storage section. In view of this fact I think you should put in as large a coil as the space will permit. It may be that in doing so the lower coil will not be called upon to do much work and you will find that you have an excess of coil in the storage section.

The refrigerant circuit should be arranged so that expansion of the refrigerant is through the upper coil first, using the lower coil primarily as a dryer coil.

With reference to the location of the unit, I would say do not install the unit in the basement. Where temperatures of freezing or lower are reached in the basement, it is not a suitable place for the condensing unit. If this unit is a water cooled unit you will immediately encounter trouble with water cooled condenser freezing, and if it is either water cooled or air cooled, you will have trouble with the high pressure being so low that the expansion valve will not function properly. As the temperature in the basement varied, so it may become necessary to readjust these valves and the pressure controlling devices.



Why you swindler!—saying you had to put in a little gas when I know that is an electric box.

SERVICE POINTERS

A department for the exchange of ideas on new devices and methods of improving service work. Five dollars is paid for each pointer published. Write up your idea today and mail it to the Service Pointer Editor.

GLYCERINE SOLUTION FOR FILTERS

ANTICIPATING the installation of many new heating and air conditioning systems, a number of inquiries have reached the Glycerine Producers' Association about glycerine filter treating solutions. Because of this growing interest, a detailed description of the method for making this fluid appears timely.

Originally developed at the research laboratories of the Glycerine Producers' Association as an efficient moistening fluid for filter bases to be used in heating and air conditioning systems, the product comprises a 50 per cent solution of glycerine and water to which about 0.2 per cent of glue is added. The procedure in making up the solution is to soak the glue overnight in a small amount of the glycerine solution and dissolve the swollen glue in the remainder of the glycerine solution. The fluid is then ready for use and may be applied to the filters by spraying or dipping.

After a period of service the treated filters can be cleaned readily because the fluid is easily removed from the filter base by immersion in or spraying with either warm or cold water. Recoating the filter base with the glue-glycerine solution economically renews the filter's efficiency.—*From Glycerine Facts.*

S S S

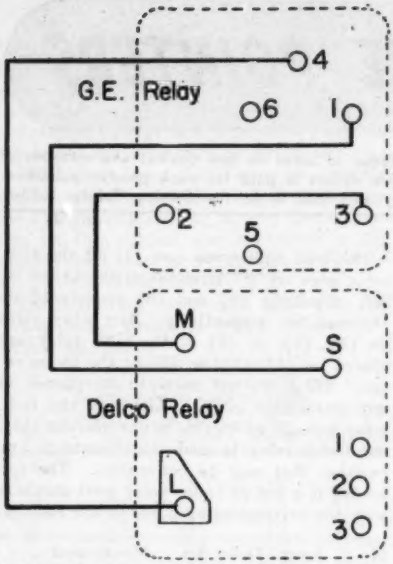
DELCO HOT WIRE AND G.E. RELAY INTERCHANGE

IN MANY cases it is impossible for the small, independent serviceman to secure the exact replacement relay for a hermetically sealed unit. This is especially true of the G.E. relays which are found on General Electric, Norge, Kelvinator, Chieftain, Philco and many other makes of hermetic units. In many cases, a Delco Hot Wire Relay is available, but it is often confusing to make the change from one type of relay to another.

The lead which was on (1) of the G.E. relay goes on "S" terminal of the Delco relay. Similarly (4) and (3) are placed on "L" and "M" respectively. Any other wires on (2), (5), or (6) of the G.E. relay are placed on (1), (2), or (3) of the Delco relay. These do not need to be placed in any particular order. Although the G.E. relay is made to operate in one position only, the Delco relay is made to operate in any position that may be convenient. The following is a list of Delco relay part numbers with the corresponding horse power ratings:

Hp.	Amp.	Delco No.	Makes used
1/5	3.5	5339201	Gibson '35
1/6	3.0	5339202	Gibson '38
1/8	2.6	5339205 5339206	Crosley, Kelvinator
1/10	2.25	5339200	Crosley, Kelvinator
1/12	1.8	5339204 5339218	Norge
1/16	1.35	5339207	Crosley (F 21 model)

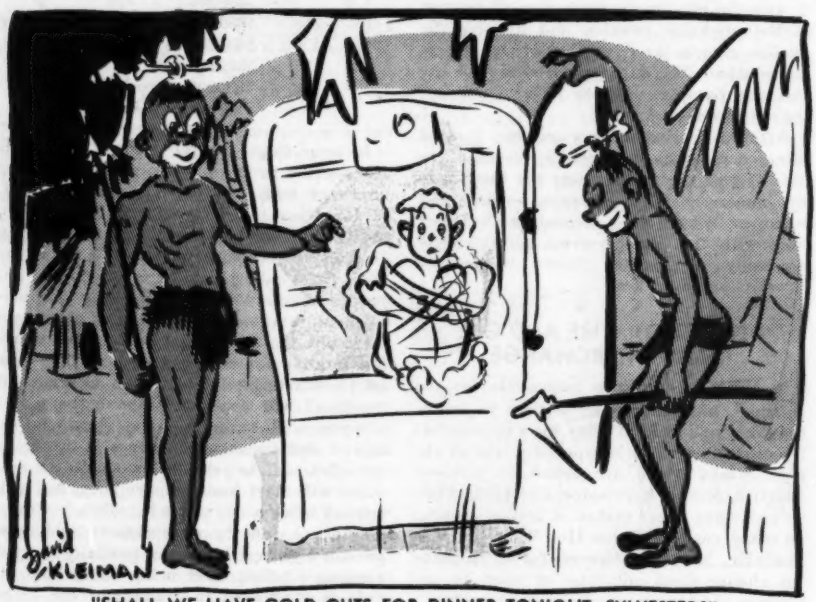
In some cases, the replacement relay will not operate properly. This may be due to improper relay size or to a defective unit. If the relay size is too large for the job, the starting winding is in the circuit too long (5 seconds and more) and should the motor stall, the winding may burn out due to improper overload protection. Also the machine may operate properly, but at certain intervals, the relay trips back to the starting winding for a second or two, then cuts off the starting winding. This intermittent "cycling" will continue without the motor stopping. However the relay should be removed and the next smaller size hp. relay installed. If the relay is too small, the machine will start and run properly, but will trip off after a few seconds. This, however, may also be due to other causes: tight compressor high head pressure; partially shorted running winding; unit being off so long, liquid is condensed in crankcase; etc. The



Wiring diagram showing corresponding connections to Delco and G.E. relays.

condenser should be checked to see that it is clean and that air-circulation is not impeded. On the fan cooled condensers, check if fan is running and if air is being circulated properly. If relay still trips off, it is best to install an ammeter in series with the motor. The running current should not exceed more than 10% of the nameplate reading. If the amperage is normal, replace the relay with one of the next higher hp. rating. If the reading is above normal, the trouble is within the machine. The unit must be replaced or removed to the shop for repairs.

Some machines require a capacitor. A quick test in the field is to connect the capacitor in series with a 150 watt bulb. If the bulb fails to light, the capacitor is open circuited and must be replaced. If the bulb lights, short the capacitor across the terminals with an insulated handle screwdriver. The bulb should become brighter and a small spark jump the terminals. If the bulb remains the same intensity, the capacitor has an internal short and must be replaced.—*Submitted by Peter Pilko, Metropolitan New York Chapter RSES.*



"SHALL WE HAVE COLD CUTS FOR DINNER TONIGHT, SYLVESTER?"

An ex-GI and Refrigeration Service Engineer Goes to College

Pictured left, is Jas. J. Kline, owner of the Kline Air Conditioning and Refrigeration Service. Springfield, Ill., exchanging a wrench for a pencil with Virtus V. Solomon, which Mr. Solomon would be able to use to greater advantage upon the occasion of his entering University of Illinois under the G.I. training program.

Pictured right, others in the Kline organization. Left to right they are: Geo. Van Meter, Virtus Solomon, Mrs. Kline, Alfred Dudda, Paul Carroll and Wilbur Compton.

HERE is a thumbnail sketch of an ex-G.I. and refrigeration serviceman. He is temporarily out of circulation while he takes advantage of the G.I. training program, but you will be hearing more about him later.

Virtus V. Soloman started refrigeration training with Jas. J. Kline, Springfield, Ill., in April, 1939, and worked until February, 1940, when he went to Champaign with the Johnson Refrigerating Co. He remained until May, 1941, returning to Springfield with Art Hammond.

He entered the service August 22, 1941, and left this country November 1, 1941, for the Philippines. He was captured April 8, 1942, and made a prisoner on Island of Luzon, October 19, 1942, taken to Mukden, Manchuria, Nov. 11, 1942, started the death march from Narvicles to San Fernandos of Pampango—rode from here to Copas of Tarlac where he was held a prisoner of the Japs for 8½ long years, until released by the Russians Aug. 20, 1945. While a prisoner he was forced to work long hours in a large machine shop.

After his release he was returned to the states and entered Vaughn Hospital for some time, then received his much needed furlough. This completed, he returned to the Kline Refrigeration Service at Springfield, May 20, 1946. He remained until September 18th, then entered the University of Illinois for a four-year course in refrigeration engineering. Mr. Kline has been approved by the Government for "on-the-job" training program, and still has four other G.I.'s in his employ, Alfred Dudda, Wilbur Compton, Paul Carroll and Geo. Van Meter.

* * *

NEW STANDARDS FOR SMALL MOTORS TO IMPROVE SERVICING

STANDARDIZATION of small electrical motors as a result of standards recently adopted by the National Electrical Manufacturers Association will improve servicing and performance of refrigerators, pumps, and similar appliances, members of the American Institute of Electrical Engineers were told recently at their Winter Meeting in the Engineering Societies Building, 33 West 39th Street, New York City.

Previous requirements were not sufficiently definite on the subjects of fractional horsepower torque and overload, which made it necessary for purchasers to test each manufacturer's motor on his device before he can be sure that it will do the job, explained Mr. C. P. Potter of the Wagner Electric Corporation, St. Louis, Mo.

Your service work is easier...

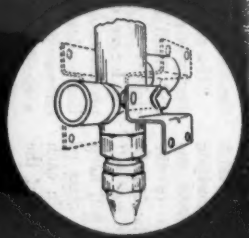
because Refrigeration Valves are *Dependable*

ONE model 270 Solenoid takes the place of EIGHT in your service kit

Solenoid, rated up to 18.5 tons Freon, offers unusual flexibility

Model 270 Solenoid Refrigerant Valve
With DUAL VOLTAGE COIL for 115-230 volts, 50 60 cycles. Capacity, liquid line, 18.5 tons Freon, 46 tons Methyl or Sulphur

Handy bracket permits simple, rigid mounting in any of several positions.



in your service kit

Solenoid, rated up to 18.5 tons Freon, offers unusual flexibility in application. For instance, the SAME solenoid can be used for: *115 or 230 volts — 50 or 60 cycles* — either ⅝" or ⅜" tubing. You would need EIGHT VALVES in your kit to cover ALL these conditions handled by ONE A-P Model 270 Solenoid.

A-P DEPENDABLE Model 270 Solenoid, with its simple, positive "Pilot Operation" requires only minimum power. Pressure holds the valve tightly shut. When current is applied, the plunger is pulled part way up, opening the pilot port and allowing pressure to leak to the pressure side. Then, with pressure above the piston reduced, the pressure below the piston opens the main valve port. The plunger, moving on upward, holds the piston away from the port, requiring no pressure drop to hold the valve open. A three-point stop, used in conjunction with a "shading coil" makes operation quiet and vibrationless. Manual opening stem is provided for use in case of current failure.

If you haven't already used the DEPENDABLE A-P Model 270 Solenoid to make your work easier, ask your jobber about it now — or write for bulletin No. 403.

AUTOMATIC PRODUCTS COMPANY
2454 NORTH THIRTY-SECOND STREET • MILWAUKEE 10, WISCONSIN
EXPORT DEPT. 13 E. 40TH STREET, NEW YORK 16, N. Y.

Dependable REFRIGERANT VALVES

REFRIGERATION SERVICE ENGINEERS

"Motor manufacturers have done a good job in producing reliable motors," Mr. Potter stated. "Every fractional horsepower motor has a horsepower rating stamped on its nameplate and this would seem to be a rather definite indication of its capabilities.

"However, this is not necessarily true, because motor characteristics are frequently modified to suit the desires of the manufacturer of the device which they operate. As a result, a motor obtained from one manufacturer might be perfectly satisfactory for a given application, while a motor of the same type and horsepower rating furnished by another maker might be unsuitable."

ALL INDUSTRY SHOW TO BE HELD EVERY TWO YEARS

THE All-Industry Refrigeration and Air Conditioning Exhibition, sponsored by The Refrigeration Equipment Manufacturers Association, will be held on an "every other year" schedule.

Inaugurating the new policy will be the Fifth All-Industry Exposition, which will be held in the Cleveland Public Auditorium, Cleveland, Ohio January 26, 27, 28 and 29, 1948. Thereafter, REMA will sponsor exhibitions every two years, an event already having been scheduled for January, 1950.

Representing 104 manufacturers who are members of REMA, and taking into full consideration reports from the 208 exhibitors in the Fourth All-Industry show, the REMA directors decided on the biennial exposition program as one which will enable the industry to display its products to the greatest effectiveness and with the benefit of careful, long-range planning. It was felt that the two-year policy not only will keep the industry's expositions from the class of "just another show" but will result in each exposition being truly representative of the industry in all its segments.

HIGH SPEEDS NEED REFRIGERATION

NEW supersonic airplanes flying in the intense cold of the upper atmosphere may need built-in refrigeration to keep the pilots from roasting, Brig. Gen. Malcolm C. Grow said at Boston.

The Army Air Forces surgeon said it is estimated supersonic speeds—above the 750-mile-an-hour level—may generate such heat from air friction against the skin of the airplane that cockpit temperatures will rise to 300 degrees.

This is only one of the problems of physiology posed by designs of new super-altitude, super-speed aircraft, he said in a paper read before the American Association for the Advancement of Science.

DEPARTMENT OF COMMERCE ISSUES NEW BOOK

THE anticipated expansion of the refrigeration and air conditioning fields spells opportunity for many new independent businesses, according to a booklet—"Air Conditioning and Refrigeration Business"—just issued by the Department of Commerce.

The booklet points out frankly that this expansion is no guarantee of individual success and states that "pitfalls can only be avoided by experience and knowledge of the particular job and of the particular locality."

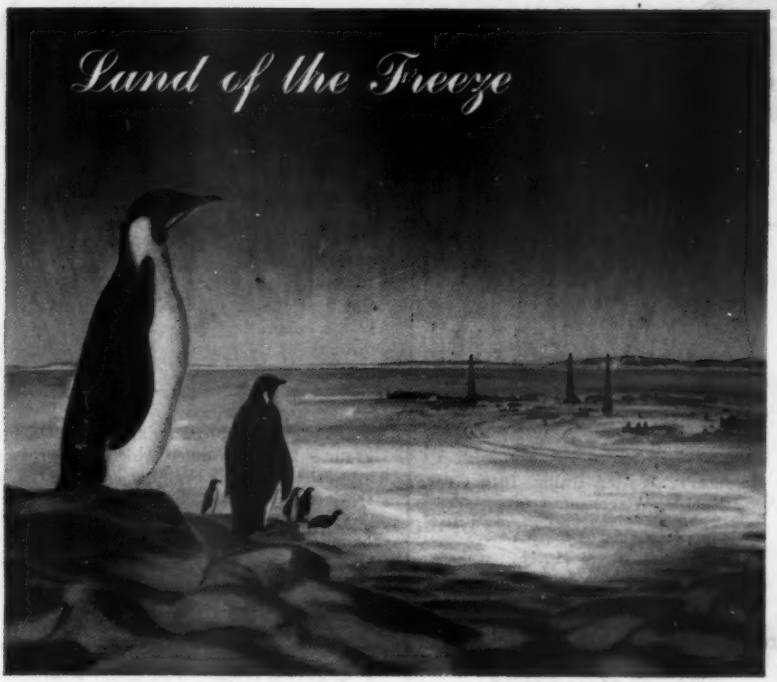
The purpose of the booklet is "to explain the nature of the refrigeration and air-conditioning business, set forth some of the opportunities in the field, and explain what skills are needed to successfully operate a small business within the industry. While many aspects of the industry are really big business and require considerable capital, there are opportunities for successful enterprises for the man with but a small amount of capital to invest in his own business."

Discussing the place of small business in the industry, the booklet states:

"The refrigeration and air-conditioning industry is really an assembly of middle-sized and small businesses which contribute specialties to the composite whole. Some of the larger corporations are not exclusively producers of air-conditioning and refrigeration equipment. Some components, of course, do not lend themselves to manufacture in a small shop.

"The fields of specialization in this industry which offer opportunities for the development of a small business include small ice plant operation, locker plant operation, repair and service of home equipment, repair and service of larger equipment, consulting and design service, parts manufacture, factory representative, wholesaler, retailer and assembler."

Copies of the booklet can be purchased from the field offices of the Department of Commerce or from the Superintendent of Documents, Washington 25, D. C., at 20 cents each.



The Antarctic—ask anyone who has wintered in Little America—is just about the coldest region on earth. Life there is mainly a problem of keeping out the paralyzing cold.

In our more temperate zone, however, the problem is more often how to keep cold *in*. Jamison has wrestled with this problem for more than half a century. As a result, Jamison-built Cold Storage Doors are designed to permit access to refrigerated spaces with the *minimum loss of cold.*

The development of Jamison Cold Storage Doors and related products has closely paralleled that of the refrigeration, cold storage, and frozen food industries. Jamison's post-war line . . . comprising Jamison, Stevenson, Victor, and NoEqual Doors . . . is the most comprehensive in the world. "Jamison-built" is the hall-mark of expertly engineered and precision-built quality . . . in a field where the difference between the best and the ordinary may spell costly, continual trouble.

Look to Jamison for cold storage doors exactly suited to your needs. For full information about the complete Jamison line . . . and address of your nearest factory branch . . . write Jamison Cold Storage Door Company, Hagerstown, Maryland.

Factory Branches in Principal Cities, Coast to Coast

JAMISON
COLD STORAGE DOORS

NEWS and ACTIVITIES

Announcements of the activities and educational work of the International Society and Local Chapters appear in this department.

COMING CONVENTIONS

Iowa State Assn., R.S.E.S.
Place: Hotel Blackhawk
City: Davenport, Iowa
Date: March 8, 9
Committee Chairman: Ervin Meyer, 314 Perry St., Davenport, Iowa.

Wisconsin Assn., R.S.E.S.
City: Milwaukee, Wisconsin.
Date: March 15, 16.
Secretary: Walter Bullis, 1016 Grove Ave., Racine, Wisconsin.

Interprovincial Assn., R.S.E.S.
Place: Mount Royal Hotel.
City: Montreal, Quebec, Canada.
Date: March 16, 17.
Secretary: E. G. McCracken, 215 Laird Drive, Leaside, Ontario, Canada.

R.E.W.A. Spring Meeting
Place: Edgewater Beach Hotel.
City: Chicago, Illinois.
Date: March 20, 21, 22.
Exec. Secretary: H. S. McCloud, 920 E. McMillan St., Cincinnati 6, Ohio.

R.E.M.A. Spring Meeting
Place: Edgewater Beach Hotel.
City: Chicago, Illinois.
Date: April 9-12, incl.
Exec. Secretary: R. Kennedy Hanson, 1107 Clark Bldg., Pittsburgh, Pennsylvania.

California Assn., R.S.E.S.
Place: Hilton Hotel. (Exhibits: Long Beach Municipal Auditorium).
City: Long Beach, California.
Date: April 25, 26, 27.
Secretary: G. S. Kennedy, P.O. Box 921, Sacramento, California.

R.E.M.A.—All-Industry Exposition
Place: Cleveland Public Auditorium.
City: Cleveland, Ohio.
Date: January 26-29, incl., 1948.
Secretary: R. Kennedy Hanson, 1107 Clark Bldg., Pittsburgh, Pennsylvania.

IOWA STATE MEETING PLANNED

THE first annual meeting of the Iowa State Association will be held March 8 and 9 at the Hotel Blackhawk, Davenport, Ia. A committee of members from chapters throughout the state have been working for nearly a year perfecting plans for this convention, which will include official formation of the association and presentation of its charter by the International Society. A program is being arranged which will prove of interest to both the beginner and experienced serviceman, to both employer and employee.

The Entertainment Committee promises a banquet on the evening of March 8, followed by a dance and other forms of entertainment. All refrigeration men in the area are invited to attend whether members or not.

CONVENTION PAPERS DISTRIBUTED TO MEMBERS OF R.S.E.S.

During January the first five reprints of papers presented at the 9th Annual Convention in Cleveland were distribuated to all members. The first mailing includes the following papers:

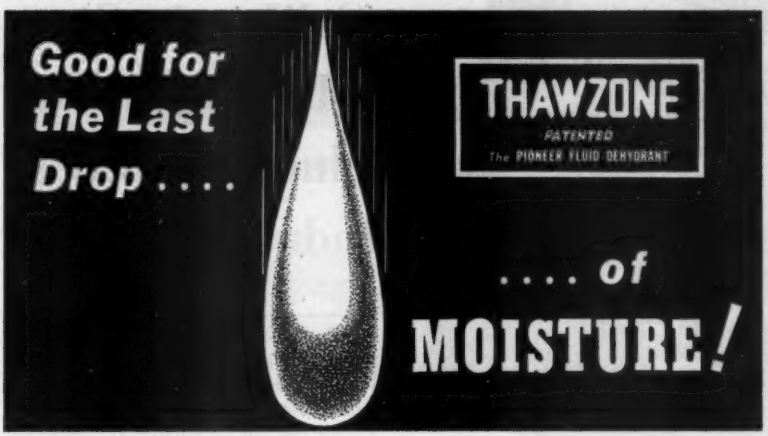
The Refrigeration Service Engineer's Place in the Industry
—by H. F. Hildreth, Mgr. Refrigeration Spec. Dept., Westinghouse Electric Corp., Springfield, Mass.

The R.S.E.S. Looks Ahead
—by Paul B. Reed, Perfex Corp., Milwaukee, Wis.

The Two Temperature Refrigerator
—by Russell Ayres, Engineer, Coolerator Co., Duluth, Minn.

A Modern Refrigerator Service Repair Shop
—by V. R. Kruse, Service Engineer, Woodstock, Ill.

Recent Developments in Thermostatic Expansion Valves
—by Monroe Seligman, Tenny Engineering Co., Newark, N. J.



Thawzone is not only excellent for most cases of moisture in refrigeration systems, but, paraphrasing a famous slogan, it is good for that last drop of moisture which becomes sidetracked or "trapped."

Thawzone is a moving dehydrant. It circulates and searches out that "last drop," destroying it chemically wherever it finds it. Sold by refrigeration supply wholesalers in the United States and Canada.

A TINY AMOUNT → A BIG JOB ← SMALL COST
. . . and we haven't raised our prices!

HIGHSIDE CHEMICALS CO.
195 VERONA AVE. NEWARK 4, N. J.

ALSO MAKERS OF
TRACE
REFRIGERANT LEAK DETECTOR

California State Meeting to Include 1st Coast Industry Exhibit

Pictured at left is cover of attractive brochure prepared by the California State Association. The brochure contains complete information covering the 1st Annual Western Refrigeration Industry Exposition.

BIG plans are in the making for the annual meeting of the California Association of the Refrigeration Service Engineers Society meeting in Long Beach, California, Friday, Saturday and Sunday, April 25, 26 and 27.

Headquarters for the convention, and educational meetings, will be held in the Hilton Hotel and the First Annual Western Refrigeration Industry Exposition, held in conjunction, will be located at the Long Beach Municipal Auditorium. The Auditorium is the newest and best equipped in the Pacific Southwest and has the largest clear floor space (28,000 square feet) of any exposition building in that locality.

Long Beach was selected for this year's meeting following an invitation from the chapter and an active campaign by the membership to secure the meeting. It will commemorate the 10th anniversary of the chapter—the first established in the state.

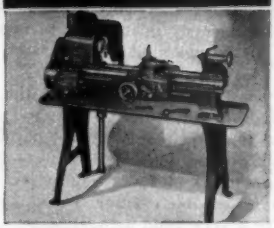
The program committee is arranging a three-day educational conference, with ample time provided for visits to the exhibits. The theme for the meeting is "Promotion through Education." Emphasis is being placed on displays that will be designed to show the best installation and service methods. In this manner it is felt that the prime objectives of the association can best be carried through in seeing that parts and equipment provide as much trouble-free service in the field as possible. The California Association brings out the important fact that 48 per cent of the total population of the three Pacific Coast states is located in Southern California, and is one of the largest refrigeration trade centers in the United States.

Invitations are being extended to all interested in the refrigeration industry to attend this important Pacific Coast meeting and exhibition.

W. W. Allison, Los Angeles, International President of the Refrigeration Service Engineers Society, is president of the California Association, and J. Pat Riley, president of the Long Beach Chapter, is general chairman of the meeting. Requests for information concerning the Exposition should be addressed to Mr. Riley at 418 Coronado Ave., Long Beach 4, Calif.

Logan A NAME TO REMEMBER WHEN YOU THINK OF BETTER LATHES AND SHAPERS

BED WAYS WITHIN .0005" OF PARALLELISM



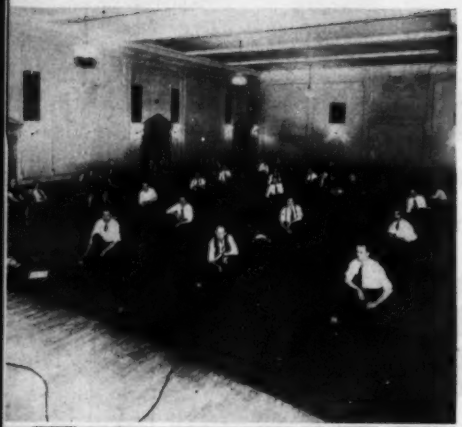
Logan Quick Change Gear Lathe

SPECIFICATIONS COMMON TO ALL LOGAN LATHES: . . . swing over bed, 10½" . . . bed length, 43⅛" . . . size of hole through spindle, 2⅝₃₂" . . . spindle nose diameter and threads per inch, 1½"—8 . . . 12 spindle speeds, 30 to 1450 rpm . . . motor, ½ hp, 1750 rpm . . . ball bearing spindle mounting . . . drum type reversing motor switch and cord . . . precision-ground ways, 2 V-ways, and 2 flat ways.

Another reason for the accuracy of Logan Lathes

On specially designed machines the V-ways and flat ways of Logan Lathe beds are machined and then precision ground to within .0005" of parallelism. At every point along the ways carriage and tailstock are in precise alignment with the headstock, and movement in either direction is in a true parallel to the axis of the ball bearing mounted Logan spindle. Moreover, the Logan bed stays accurate. The specially alloyed casting is extra heavy, with oversize ribs and balanced sections of even thickness that neutralize internal stresses. Thorough seasoning before and between machining operations makes the bed warp-free. The Logan Lathe bed is another example of how advanced design and careful construction make Logan Lathes accurate and dependable in the tool room or on the production line. Ask your Logan dealer, or write direct for full catalog information on Logan Lathes and Logan Shapers. P-2-M

LOGAN ENGINEERING CO. CHICAGO 30, ILLINOIS



MILE HIGH CHAPTER TUBE BENDING CONTEST

THE Third Annual Tube Bending Contest sponsored by the Mile High Chapter of the Refrigeration Service Engineers Society was held Saturday night, January 18th in the Auditorium of the Continental Oil Building, Denver.

There were sixteen contestants entered in the contest which demonstrated skill in bending, flaring and cutting copper tubing in completing the problem, from a blueprint.

The first prize of $25.00 was won by Mr. Robert Wize, who is employed as a service engineer at Fitzsimons General Hospital in Denver. His time was 18 minutes and 7 seconds. Second prize went to Mr. L. W. Barley of Colorado Springs, and third prize to Mr. Nick Meyers of Denver.

Although the contest was sponsored by the Mile High Chapter, the contestants did not have to be members to enter, and entrees came from all parts of the Rocky Mountain Territory.

The comedy was furnished by R. C. Kimmel who had never bent copper tubing in his life, but insisted he was as good as the best, even with his coat on. It seems that Mr. Kimmel forgot his tools (hammer and pliers), and although the judges announced him winner when they got his name on a perfect specimen by mistake, it turned out that his model was slightly imperfect, and wouldn't stay together.

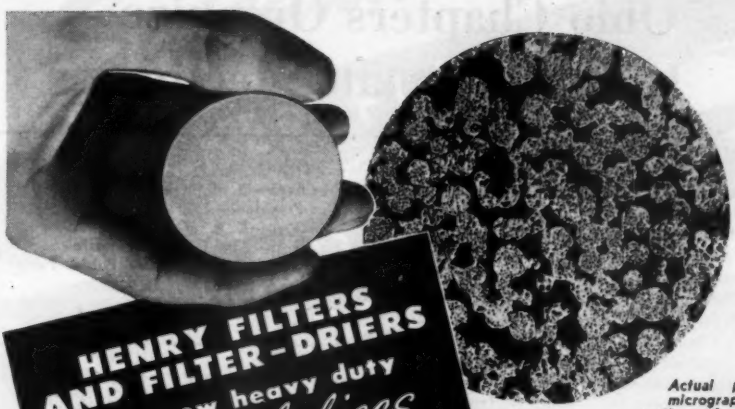
There were 115 in attendance at the contest, including the ladies, who came along to see the fun, and participate in the drawing for door prizes donated by various firms. After the contest and drawings were over, the balance of the evening was spent in dancing to a very good orchestra.

The blueprints and fittings for the contest were donated by the Imperial Brass Co.

"On your mark—Ready . . ." could be the title of the upper picture at left as the contestants in the Mile High Chapter tube bending contest take their places. The contestants shown, center, were, standing left to right: E. B. Flamboe, G. Holtzinger, R. A. Scott, Erwin Sindt, Lyle Smith, Dole K. Lewis, James Cook, Joe Connell.

Seated: T. M. Reed, V. C. Bennett, Robert Wize, L. W. Barley, Nick Meyers, Marco Seracuse, Howard Tabor.

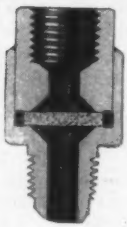
In the bottom picture, R. C. Kimmel expresses determination while having a little difficulty in trying to prove that the perversity of innate matter can be offset by mind over matter. But, no matter it is all a matter of fun.



HENRY FILTERS AND FILTER-DRIERS with new heavy duty *sintered discs*

Actual photo-micrograph of section of Henry sintered disc (magnified 50 diam.)

more efficient
free flow of refrigerant
will not collapse if clogged



TYPE SF 12

A small unit for domestic refrigerators, water coolers, etc. May be installed directly on expansion valve, etc. 1 1/2" long with 1/4" fem. x 1/4" male flare.

TYPE SF 21

A larger filter for small commercial installations. 2" diameter 2 1/4" overall length. 1/4" male flare connections.

TYPE SFD 11

Combination Sintered Filter-Drier. Small efficient unit filled with silica gel. 1 1/4" diameter shell with 1/4" male flare connections.

Other Filter-Driers With Sintered Discs Having 6 and 12 Cubic Inches Drier Capacity Also Available. Ask for Special Bulletin.

HENRY now offers small filters and filter-driers with sintered metal filtering elements. The sintered metals, in disc form, are made from metallic powders carefully screened for controlled particle size, fused under hydraulic pressure and controlled heat into a porous, homogeneous mass.

The Henry sintered discs will filter out particles larger than 75 microns (.003") diameter, roughly the filtering equivalent of a 200 mesh screen. While more effectively collecting foreign particles in a system, these discs possess an inherent porosity that assures free passage of the refrigerant. The most important advantage is the fact that Henry sintered discs will not collapse if they become clogged because they are designed to withstand 300 pounds pressure. Ask your Henry jobber for full information on the economies as well as the improved protection these new Henry filters and filter-driers afford.

Special designs can be furnished for volume requirements.

HENRY VALVE COMPANY

Control Devices, Valves, Driers, Strainers and Accessories for Refrigeration and Air Conditioning and Industrial Applications

3260 W. GRAND AVENUE • CHICAGO 51, ILLINOIS

Cable: HEVALCO CHICAGO 6

Ohio Chapters Organize Hold First State Meeting

"ENTHUSIASTIC" is as good a definition, for a lack of a more descriptive term, to describe the first state meeting as a chartered organization of the Buckeye Association of the Refrigeration Service Engineers Society. With representation present from each of the ten chapters in the state, the two-day meeting in Columbus, Ohio, at the Seneca Hotel, climaxed several months' work following the International Society's annual convention in Cleveland.

Guiding the association through its preliminary stages was the responsibility of Earl Yockey, Columbus, President of Columbus Chapter and a member of the International Board of Directors, who acted as Temporary Chairman, Paul Spring, Cleveland, Ohio served as Temporary Secretary. Columbus Chapter was the host to the meeting and provided the Saturday evening buffet supper and party for the visiting members and guests. Nearly 200 ladies and guests enjoyed the hospitality of the host chapter on this occasion. The highlight of the evening's festivities was the drawing of prize winners of the state wide raffle. Prior to the convention, blocks of tickets were disposed of by all of the chapters, and 25 prizes, ranging from a 7 cubic foot refrigerator to a drum of Freon, were awarded. The total cost of the prizes was $750.00 and the State Association gained approximately $300.00 to start their treasury.

The State Association formally adopted its Constitution and By-Laws providing, among other things, for a $1.00 per capita dues per member annually to finance the Association's activities.

The Saturday afternoon educational session was held in the auditorium of the Battelle Memorial Institute and Chairman Yockey, in opening the meeting, briefly outlined the preliminary work that had been accomplished. In his remarks he stated that the principal purpose of the Association, as he visualized it, was to "further the educational advancement of its members in carrying forth the objectives of the International Society and local chapters, and to provide an opportunuity for better fellowship of those engaged in the business." Paul B. Reed, Chairman of the International Educational and Examining Board, addressed the convention on the subject of "Refrigerant Substitution." In his talk Mr. Reed compared the various characteristics of a wide range of refrigerants and the discussion from the floor following his presentation attested to the interest of the members in this subject.

Officers

President—Oren Nichols, Jr., Medina.
Vice-President—Paul Sizer, Toledo.
Secretary—R. E. Wagner, Piqua.
Treasurer—Carl Dieter, Youngstown.
Sergeant-at-Arms—Forrest Poole, Portsmouth.
Educational Director—A. M. Fenwick, Cleveland.

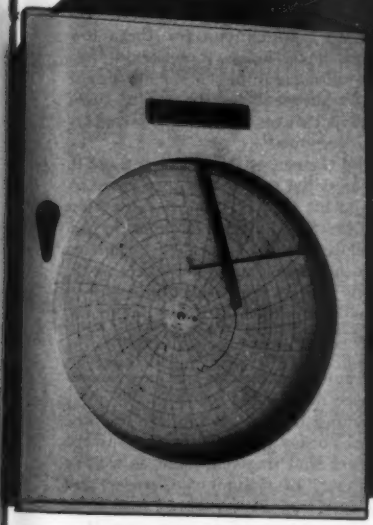
A director of the Battelle Institute briefly outlined the purpose of this endowed Institute and described the many research projects that the Institute had undertaken and which today are accepted in industry as standardized practices. The speaker pointed out that the Institute was active in its research work in the "Manhattan project" (atomic bomb) and that from a small beginning this organization had now in its employ over nine hundred researchers and technicians. The convention group was conducted on an escorted tour through the various departments and laboratories which proved most interesting.

The Sunday morning session was devoted to completing the details of the State Association and in opening the meeting H. T. McDermott, International Secretary, outlined the "Advantages of a State Association." He comprehensively pointed out that because of the growth of the International Society it was particularly advantageous at this time to have state associations that could act in correlating the functions of the International Association with the individual state chapters, thereby providing a better association service which would ultimately reflect to the advantage of the individual member. Then, too, the International Association, recognizing the work of the State Associations, had provided that a representative from each State Association now formed would serve in an advisory capacity

Safeguard LOCKER PLANTS ...AND CUSTOMERS

WITH THE

HONEYWELL AUTOMATIC TEMPERATURE RECORDER



PERMANENT chart records produced by the new Honeywell Automatic Temperature Recorder provide a continuous check on the operation of your refrigeration equipment.

Each recorded disc gives you a complete week's record of your locker plant temperatures and tells the exact minute of failure in the event this occurs. Being permanent, each disc may be filed as positive proof to safeguard against claims regarding food spoilage. The instrument will record temperatures from −30° to +70° F. easily covering normal temperatures, with ample range for abnormal conditions.

Moreover, the Honeywell Automatic Temperature Recorder promotes customer satisfaction. Your patrons are assured that their stored foods are kept at safe temperatures and protected against spoilage. It also sells new prospects on the dependability of your service. Get complete information now about this newest Honeywell refrigeration control. Ask your contractor or jobber or write Minneapolis-Honeywell Regulator Co., 2662 Fourth Ave. So., Minneapolis 8, Minn. Branches and distributing offices in all principal cities.

MINNEAPOLIS **Honeywell**

CONTROL SYSTEMS

to the International Board of Directors and form a closer liaision between the International organization and the individual chapters.

The report of the committee charged with the responsibility of preparing the Constitution and By-Laws was presented by Walter Wright, Cleveland, chairman of the committee, and with minor corrections the association voted to adopt the Constitution and By-Laws.

Now that the organization was well on its way to a chartered association, Chairman Yockey requested International Secretary McDermott to present the charter, and it was at this time that the opportunity was provided to three more Ohio chapters to affiliate as charter members.

Nominations

Forrest Poole of Portsmouth, Ohio, Chairman of the Nominating Committee, presented the report of his committee recommending the election of Oren Nichols, Jr., Medina, for State President; Paul Sizer, Toledo, Vice-President; R. E. Wagner, Piqua, Secretary; Carl Dieter, Youngstown, Treasurer; Forrest Poole, Portsmouth, Sergeant-at-Arms; A. M. Fenwick, Cleveland, Educational Director.

The Chairman then announced that inasmuch as time was limited before the luncheon, the formal election would be held in the afternoon. Concluding the morning session an excellent paper was presented on the subject "Minor Repairs to Motors" under the supervision of Warren N. Moore, of the Cleveland office of Century Electric Company. The presentation pointed out the repairs that could be made on various types of motors and the speaker illustrated his talk with the use of slides. Again the interest in the subject was evident from the lively question and answer period that followed.

Following the luncheon, Warren W. Farr, Cleveland, past International Director of the R.S.E.S. and President of the National Association of Refrigeration Contractors, stated that the opportunity presented itself for close cooperation between both associations, and that a goodly portion of the members of the contractors were also members of the Society and knew of its functions from their own personal knowledge. Mr. Farr delightfully pointed out the lessons that can be learned by meeting with other members interested in the same business activities, and related some incidents of the early formation of the R.S.E.S., of which he was a charter member. Following Mr. Farr's remarks the election of officers was held and the convention, by unanimous approval, accepted the recommendations of the Nominating Committee and the officers were duly installed by International Secretary McDermott.

The afternoon session was opened with an illustrated talk presented by Charles R. Neeson, Chief Engineer, Airtemp Division, Chrysler Corp. on "Two Stage Refrigeration." Mr. Neeson did a splendid job of describing the various systems that had been developed and were being currently used to obtain low temperatures. Among other things, he predicted the development of several new refrigerants that would easily provide temperatures down to minus 250° for commercial applications. He stated that while the need may not be presently necessary for many applications for these low temperatures, nevertheless it generally followed that subsequent developments might indicate a requirement for the use of these sub-zero temperatures on a broader scale than that now known.

Concluding the convention, George Schuld, Cleveland, kept the convention in a reminiscent mood on his subject "The Service Man Speaks." Mr. Schuld, an old-timer in the business, related some of the early problems encountered in service and installation work, and while his subject lent itself admirably to a humorous description of these incidents, nevertheless it did point out how many developments and improvements in equipment were the result of the practical experiences of the service man in the field.

In concluding the convention, tribute was paid to Mr. Yockey and Mr. Spring for the excellent work that they had done, as well as to the members of Columbus Chapter and Howard Grossman, Secretary of Columbus Chapter. Announcement was made that Mrs. Robert Creamer had been appointed Temporary Chairman by a group of ladies, to inaugurate an auxiliary to function at subsequent State Association meetings.

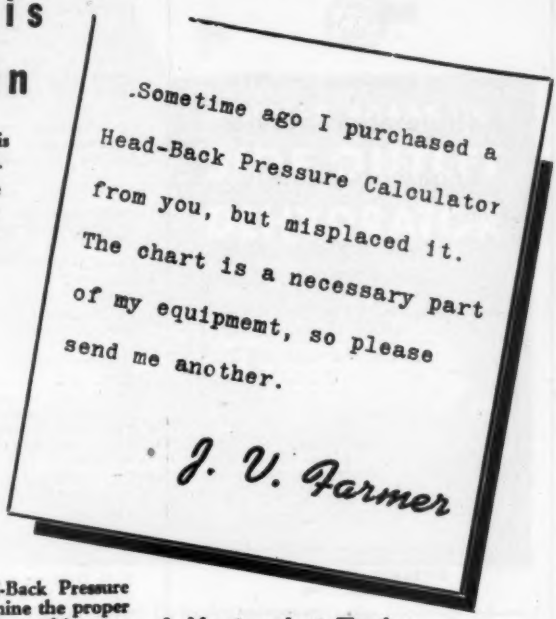
ROBERTA DAVIS MAKES HER APPEARANCE

CONGRATULATIONS are in order for Mr. and Mrs. Ralph Davis, Buffalo, N. Y., parents of a daughter, Roberta, born on January 3rd, weighing in at 6.4 pounds. Roberta will be a playmate for her brother, the only other child of the family. Mrs. Davis is doing well and Ralph is happy about the whole thing.

"The Chart is a necessary part of my equipment"

so says this service man

• Now that the Calculator is being put to the test of practical use in the field, we have had a number of letters from service men testifying to its value. This one is typical.


.Sometime ago I purchased a
Head-Back Pressure Calculator
from you, but misplaced it.
The chart is a necessary part
of my equipmemt, so please
send me another.
J. V. Farmer

WRIGHT'S

H. B. P.

CALCULATOR

The purpose of the Head-Back Pressure Calculator is to quickly determine the proper head pressure, for the following refrigerants when the suction pressure, room temperature or mean water temperature is known.

Carrene	Methyl Chloride
Isobutane	Freon-12
Sulphur Dioxide	Ammonia
Freon-22	

Actual Size 3½" x 3½"

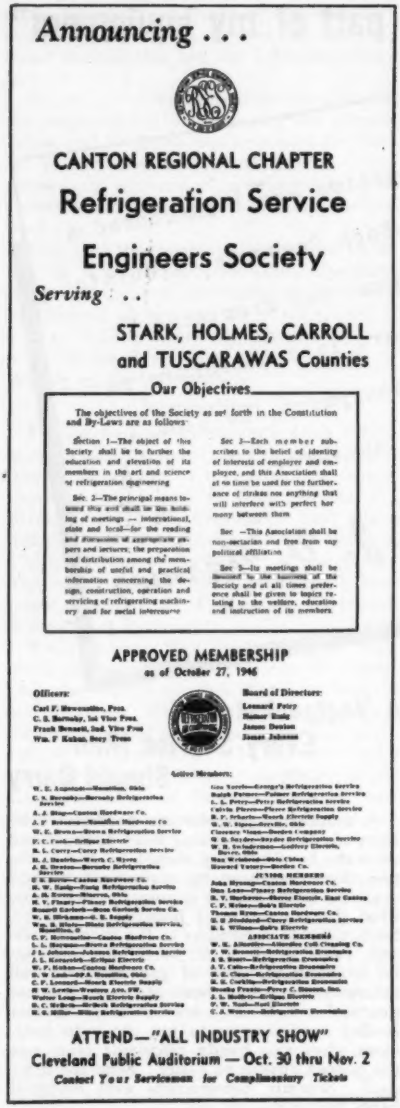
A Vestpocket Tool Every Service Man Should Carry

A number of troubles can be detected by comparison of the existing head pressure and what the head pressure should be, but in the past there has been no convenient method available to the service engineer to determine what the correct head pressure should be. Such variable conditions as the suction pressure, room temperature, water inlet and outlet temperature, kind of gas used, etc., all determine the proper head pressure. It is not practical to depend on one's memory of other similar conditions or to just use snap judgment when this handy calculator gives you the correct answer so easily. Send for it today! Sturdily constructed, with oil-proof finish, for on-the-job use.

POSTPAID $1.00

NICKERSON & COLLINS CO.

435 N. WALLER AVE., CHICAGO



Announcing . . .

CANTON REGIONAL CHAPTER

Refrigeration Service Engineers Society

Serving . .

STARK, HOLMES, CARROLL and TUSCARAWAS Counties

Our Objectives

The objectives of the Society as set forth in the Constitution and By-Laws are as follows:

Section 1—The object of this Society shall be to further the education and elevation of its members in the art and science of refrigeration engineering.

Sec. 2—The principal means to attend this end shall be the holding of meetings — international, state and local—for the reading and discussion of appropriate papers and lectures, the preparation and distribution among the membership of useful and practical information concerning the design, construction, operation and servicing of refrigerating machinery and for social intercourse.

Sec. 3—Each member subscribes to the belief of identity of interests of employer and employee, and this Association shall at no time be used for the furtherance of strikes nor anything that will interfere with perfect harmony between them.

Sec. —This Association shall be non-sectarian and free from any political affiliation.

Sec. 5—Its meetings shall be limited to the business of the Society and at all times preference shall be given to topics relating to the welfare, education and instruction of its members.

APPROVED MEMBERSHIP

as of October 27, 1946

Officers:

Carl F. Stevenson, Pres.
C. S. Barnaby, 1st Vice Pres.
Frank Bernard, 2nd Vice Pres
Wm. F Kuhn, Secy Treas

Board of Directors:

Leonard Peiry
Homer Ecoy
James Devlon
Jimes Johnson

Active Members:

W. E. Angstadt—Hamilton, Ohio
C. A. Barnaby—Barnaby Refrigeration Service
A. J. Binge—Canton Hardware Co.
A. F. Brenneman—Hamilton Hardware Co.
W. E. Brown—Brown Refrigeration Service
H. C. Cash—Bridge Electric
R. L. Corry—Corry Refrigeration Service
R. J. Hamilton—Worth C. Myers
J. E. Howard—Barnaby Refrigeration Service
E. M. Kerns—Canton Hardware Co.
H. W. Kemp—Kemp Refrigeration Service
J. H. Thomas—Masters, Ohio
M. V. Finney—Finney Refrigeration Service
Russell Corbett—Bess Gintock Service Co.
W. H. Hirkman—H. S. Supply
Wm. B. Hirte—Hirte Refrigeration Service, Akron, O
C. F. Hoffman—Canton Hardware Co.
L. L. Harmon—Brown Refrigeration Service
J. L. Johnson—Johnson Refrigeration Service
J. L. Kenworth—Kriner Electric
W. F. Kuhn—Canton Hardware Co.
H. W. Lash—DPA Hamilton, Ohio
C. F. Leonard—Hosch Electric Supply
H. W. Lewis—Western Ave. SW.
Walter Long—Hosch Electric Supply
H. C. Nesbit—Nesbit Refrigeration Service
H. S. Miller—Miller Refrigeration Service
Tom Norris—George's Refrigeration Service
Ralph Palmer—Palmer Refrigeration Service
L. L. Perry—Perry Refrigeration Service
Curtis Pierce—Pierce Refrigeration Service
R. F. Schartz—Hosch Electric Supply
W. G. Sipes—Servelite, Ohio
Clarence Vinup—Borden Company
H. D. Snyderdrube—Refrigeration Service
W. R. Sonderman—Godfrey Electric, Dover, Ohio
Wm Strickland—Ohio Cities
Howard Yaney—Borden Co.

JUNIOR MEMBERS

John Hyman—Canton Hardware Co.
Don Lane—Finney Refrigeration Service
R. V. Barbarow—Stone Electric, East Canton
C. F. Meier—Bob's Electric
Thomas Ryan—Canton Hardware Co.
G. E. Dodds—Corry Refrigeration Service
R. L. Wilson—Bob's Electric

ASSOCIATE MEMBERS

W. G. Albertini—Alberdin Coil Cleaning Co.
F. W. Anderson—Refrigeration Economics
A. B. Brett—Refrigeration Economics
A. V. Cline—Refrigeration Economics
H. E. Cline—Refrigeration Economics
H. G. Corbin—Refrigeration Economics
Bentley Preston—Perry C. Hinson, Inc.
J. L. Redlich—Eclipse Electric
F. W. Vanderhoof Electric
C. A. Werner—Refrigeration Economics

ATTEND—"ALL INDUSTRY SHOW"

Cleveland Public Auditorium — Oct. 30 thru Nov. 2

Contact Your Serviceman for Complimentary Tickets

Canton Regional Chapter uses 3 column newspaper advertisement to tell community of formation of Refrigeration Service Engineers Society chapter in Canton, Ohio. This ad, published in October, appeared just prior to All-Industry exhibit in Cleveland. In its original size as it appeared in the Canton newspaper, it occupied a space 6x18 inches.

NEW CHAPTERS IN THE MAKING

● ELMIRA, N. Y.—Another of the formation meetings of Southern Tier Chapter was held December 5. Carl Stewart presided, explaining to the men present the purpose of the organization. As an educational feature, Mr. Smith of the Hubbell Yoder Plate Co. presented movies of low temperature installations and operations. A number of the visitors signed applications for membership and nominations were received for officers of the organization. Refreshments were served following the close of the meeting.

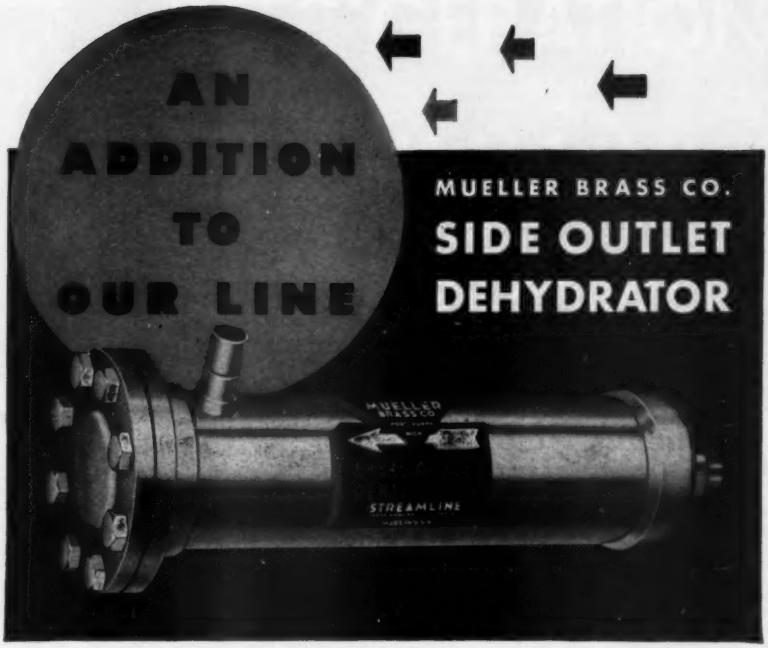
● COUNTY OF IMPERIAL, CALIF.—Arrangements have been made for the charter of the Imperial Valley Chapter to be presented during the meeting of the California State Association on April 25-26.

● GARY, INDIANA.—A group of men in the vicinity of Gary, Ind., met January 22nd under the guidance of Ed. Riccio and F. Lilley of the Chicago Chapter, for the purpose of considering the formation of a chapter in that area. J. H. Brooks was appointed Temporary Chairman to conduct the meeting, then the meeting adjourned for the serving of dinner. The meeting was resumed after dinner and discussion led to the adoption of the name "Northern Indiana Chapter" with the territory to consist of four counties. Sixteen of those present signed applications for membership and the application for a charter. Temporary officers were elected as follows: Andrew Porter, *President*; Paul Kanich, *1st Vice-President;* L. G. Lennox, *2nd Vice-President;* F. O. Dildine, *Secretary-Treasurer;* M. Schwarzentraub, *Sergeant-at-Arms;* and J. Milne, *Educational Director*. Board of Directors—Frank Chambers, D. F. Roe, C. Laubly, James Ritz and J. H. Brooks. An invitation was extended by Messrs. Riccio and Lilley to the newly formed chapter to make a visit to the Chicago Chapter within the near future.

● PUEBLO, COLO.—Charter for the San Isabel Chapter was presented February 10. E. L. Martin, President of the Mile High Chapter, Denver, Colo., made the presentation.

● GREAT FALLS, MONTANA—An organizational meeting was held on January 20 in the Rainbow Hotel, Great Falls, Mont., with 30 servicemen in attendance. These men came from all parts of western Montana. After due consideration, a motion was passed to the effect that a chapter be formed in Great Falls. The name selected is "North Montana." The second Monday of each month was selected as a meeting night and the officers elected are as follows: S. C. Wacker, *President;* Al Forbes, *1st Vice-President;* Tom Young, *2nd Vice-President,* P. F. Dodds, *Treasurer;* Vern Borach, *Secretary;* and Ray Borcher, *Chairman of the Educational Committee.*

A dinner was served in the hotel to 48 persons, 14 of whom were wives of the attending servicemen. Many of these men traveled as far as 200 miles to attend the meeting. Messrs. McKee and Page of Detroit Lubricator Company presented a talk and slides as part of the educational program. Thirty-six men signed the petition for charter.



The Mueller Brass Co. Side Outlet Dehydrator permits the renewal of the drying agent without breaking the line. All that is necessary is to remove the flanged end, remove the exhausted drying agent, and replace with new.

All Mueller Brass Co. Filters and Driers are provided with a CONE SCREEN OUTLET, a specially designed filtering element that adds immeasurably to the life and efficiency of Driers and Filters.

Fine crystals or powder, which continually break away from the Dehydrating Agent, are forced to the base of the cone, leaving the center and tip of the screen open for the free flow of refrigerant. The cone screen itself is filled with pure wool which traps any particles that are sufficiently fine to pass through the screen mesh.

Particular attention has been given to screen areas in Mueller Brass Co. Filters and Dehydrators so that each size permits efficient passage to the maximum refrigerant volume that is used in a particular size refrigerant line.

Your jobber handles a complete line of Mueller Brass Co. refrigeration products. Order through him.

MUELLER BRASS CO.
PORT HURON, MICHIGAN

● BILLINGS, MONTANA—Under the guidance of J. L. Driskell, member of the International Board of Directors, a group of men met on January 21 in Billings, Mont., for the purpose of considering the formation of a chapter, the name "Midland Empire," with the second Tuesday of each month as the meeting night being selected by the group. Thirty-one men were in attendance at the meeting, held in the Northern Hotel. Thirty of the men signed a petition for charter. Temporary officers elected are: M. M. Brown, *President;* Ugo Scala, *1st Vice-President;* H. F. Schulz, *2nd Vice-President;* Dave Magowan, *Treasurer;* N. L. Sulenes, *Secretary;* and E. A. Scheidecker, *Chairman of the Educational Committee.*

● SHREVEPORT, LA.—Arrangements have been made for the presentation of the charter to the Shreveport Chapter on February 20. E. A. Summer is expected to make the presentation.

* * *

Chapter Notes

● BOSTON CHAPTER, *Boston, Mass., Jan. 15*—The meeting started off with a steak dinner held in the ballroom of the Hotel Gardner. Following the dinner, members enjoyed a program of entertainment. President Wm. Tierney of New England States Chapter was a visitor who spoke briefly to the meeting. The installation of officers was made by Past President A. O. Alexander. The balance of the evening was devoted to business discussion of the chapter.

● CHICAGO CHAPTER, *Chicago, Ill., Jan. 14*—One of the first orders of business was a discussion of the proposed changes to the Constitution and By-Laws. The changes were finally accepted by the meeting. Installation of newly elected officers was made by International Director A. L. Robertson. Part of the changes in the Constitution accepted involved the addition of two new members on the Board of Directors and a Recording Secretary. These men were added to the formerly elected officers and installed at this time. Irving Alter, a charter member of the chapter, took photographs of the installation of officers and other views at the meeting. On the educational program, John Habich showed one of the series of educational films provided by the National Society, and an educational film entitled "The Devil Drivers."

● COLONELS CHAPTER, *Louisville, Ky., Jan. 2*—The annual election of officers which took place at the meeting resulted in the following: Yewell McKinley, *President;* H. T. Hood, *Vice-President;* E. J. Dicken, *Secretary-Treasurer;* and E. K. Tingle, *Sergeant-at-Arms.* H. C. Moore, retiring President, installed the new officers in office, stressing the importance of their duties and responsibilities to the members.

● ELM CITY CHAPTER, *New Haven, Conn., Jan. 3*—About 30 members enjoyed a well delivered talk and movie about Aminco oil separators and Thawzone. George B. Boone, manufacturer's agent, was well received. He traced the history and development of Thawzone for the group so well that there was little doubt of its merits in eliminating moisture when used as directed. The questions asked were a good indication that this, and the ensuing oil separator portrayal, had made a serious impression on the audience. Some very interesting theory was brought out in the success of oil separators and resultant system efficiency gained through their usage. *January 10*—Sixteen active members met at a special meeting and took the certificate examination. Much enthusiasm was shown and it is hoped that this may assist the National Office in its efforts to promote greater interest in the highest class of membership in the Society.

Pictured above are the newly elected officers of the Chicago Chapter. They are, back row, left to right: Frank Frazee, Educational Director; Al Delheim, Recording Secretary; Floyd Lilley, Secretary; Pat Doyle, 2nd Vice-President; Lou Norris, Sergeant-at-Arms. First row—left to right: John Habich, Treasurer; John Heger, 1st Vice-President; Archie Robertson, International Board of Director; Ed. Riccio, President. Mr. Robertson was present at the meeting to install the new officers.

In the lower view at the left, Ed. Riccio, President Elect, is shown with Past President Fred Stevens. At the right is E. Jennings, Temprite Products Corp., who was the speaker of the evening. *Photos by Irving Alter*

● FOX RIVER VALLEY CHAPTER, *Fond du Lac, Wis., Jan. 8*—The usual business session was conducted by President Fred Hansen, and during a discussion of future entertainments it was decided that due to weather conditions decisions would be postponed. F. Jones, the speaker of the evening, discussed the problems of milk cooling on the farm. This was a very informative discussion, well received.

● FURNITURE CITY CHAPTER, *Grand Rapids, Mich., Jan. 7*—The annual election of officers resulted in the following: L. A. Habel, *President;* E. A. Fry, *Vice-President;* Ralph A. Post, *Secretary;* Gerald Scott, *Treasurer;*

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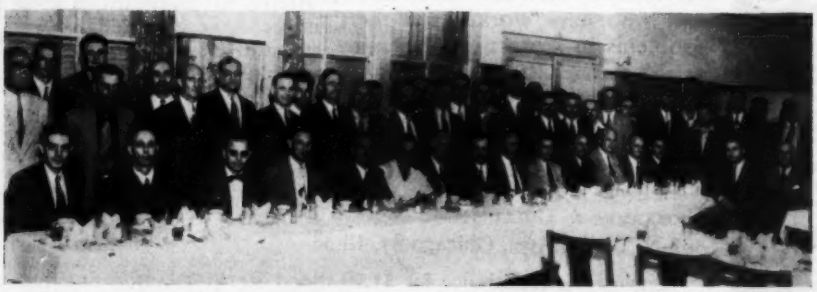
A view of the charter presentation meeting of the Joplin Chapter, held December 11th. C. J. Doyle, International Treasurer, shown at the extreme left in the first row, presented the charter to the officers.

and George Stearns, *Sergeant-at-Arms.* Board of Directors—M. McCue, P. H. Cooper and F. J. Buckley. Announcement was made that the officers would be installed at the next meeting.

● GREENSBURG CHAPTER, *Greensburg, Pa., Jan. 6*—After a short business meeting, Educational Chairman Joe C. Hipps introduced the guest speaker of the evening, K. M. Newcum of Superior Valve and Fitting Co. Mr. Newcum spoke on the subject of driers, super-heat, heat exchangers, and methods of selecting and installing heat exchangers. L. B. Gardner, of Chandler-Boyd, followed with a talk on the installation of fibre glass insulation.

● HOUSTON CHAPTER, *Houston, Tex., Jan. 14*—Officers present at this meeting included Ted Epperson, *President;* T. L. Burrough, *1st Vice-President;* C. L. Fleming, *Secretary,* A. A. Haney, *Educational Chairman* and *Directors* K. R. Daniels and E. E. Smith. E. E. Haney spoke on the importance of the refrigeration service industry and how it was growing up, giving much credit for its advancement, in the service field at least, to the chapters of the R.S.E.S. He urged that members of the chapter pull together to make their services more valuable to the public through raising the reputation of the group. He asked that the newer men in the field consult with the older servicemen when they needed help, pointing out that a new man, at the same time, may often give useful pointers to the older men. W. C. Timmerman, Past President, gave a brief talk on locker plants. T. L. Burrough, International Director, read a letter received from the National Society asking for a vote on various questions. The opinion of the membership was received on these questions and majority vote entered for a reply to the National Society.

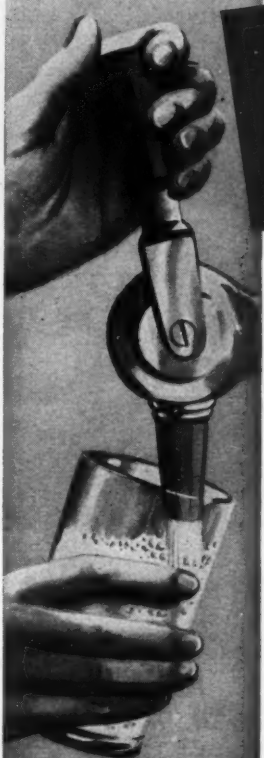
● INTERPROVINCIAL ASSOCIATION, *Leaside, Ont., Can., Nov. 29*—On the reports of standing committees received at this meeting, K. Wood, Chairman of the Advisory Committee, was absent and E. G. McCracken read Mr.



Members of the Sunshine City Chapter at a special dinner meeting arranged for a visit from P. B. Reed, International Director of the Educational Board. Fifty-five were in attendance to hear an interesting talk by Mr. Reed.

5620 glasses of highly carbonated water produced from single 20 lb. tank of CO_2 gas

. . . WITH THE NEW *Temprite* COOLER-CARBONATOR



- All stainless steel construction.
- Independent of city water pressure.
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Latest Temprite development is the sensational *Combination Cooler-Carbonator* . . . which actually delivers over 5620 glasses of sparkling, highly carbonated water (over 4 volumes) from one 20-pound tank of CO_2 gas, *at a constant 40° temperature.*

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The new Temprite system, when connected to a ⅓ H. P. condensing unit, can dispense over 300 glasses of either plain or carbonated water per hour (or any proportion of each that may be required) reducing the temperature from 80° down to 40° F.

The Temprite cooler-carbonator package includes all necessary valves, checks and fittings, assembled to the carbonator, together with the motor, pump and relay assembly . . . *ready for immediate installation.*

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At a meeting held November 14th in Newport News, Va., the Peninsula Chapter received its charter from W. Booth, International Director from Richmond, Va. The two views above show, first, those in attendance at the dinner, and below Mr. Booth is shown presenting the charter to the president of the chapter.

Wood's report. For the Publicity Committee, Mr. McCracken again read Mr. Parish's report. G. Condie, Treasurer, reported that the finances of the Association were in excellent shape, at the same time presenting a number of bills to be paid. Art Doan, Chairman of the Educational Committee, reported that he is now waiting for films from the International office to arrive so that they may be distributed to various chapters in Canada. President G. O. Roe gave a resume of his trip to Ottawa on November 28th, and the Secretary read a report from the New Brunswick Chapter. The balance of the meeting was devoted to business matters of the organization.

● JACKSON PURCHASE CHAPTER, *Paducah, Ky., Jan. 9*—The chapter received its charter at a dinner meeting held in the Skyview Cafe. International Director C. S. Tucker presented the charter with a full complement of chapter officers present. After business of the evening was completed, the entire attendance joined in the general discussion which proved lively and interesting.

● JOPLIN CHAPTER, *Joplin, Mo., Dec. 11*—C. J. Doyle, International Treasurer, presented the charter to the Joplin Chapter at a special meeting held at the Joplin Supply Co. On the educational program the Entertainment Committee showed a film on German industry, furnished by the Weatherhead Co.

● LIMA CHAPTER, *Lima, Ohio, Jan. 16*—The speaker for the evening was Tom Crider, associated with the Crider Corp. of Lima, manufacturer of two and three stage condensing units. Mr. Crider gave some first hand information regarding two and three stage units and their applications.

● METROPOLITAN NEW YORK CHAPTER, *New York, N. Y., Jan. 10*—The installation of officers was one of the first orders of business, after which the President gave a complete account of the New York State Asso-

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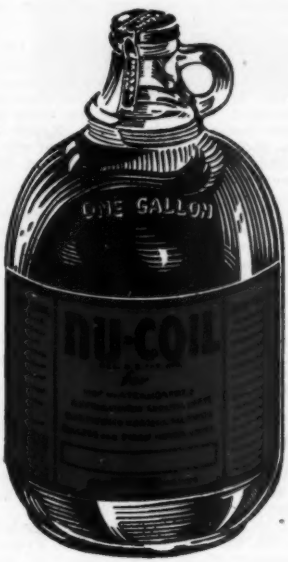

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ciation meeting. A quiz program was conducted by the Chairman of the Educational Committee consisting of various questions on various phases of the refrigeration industry. The judges were Irving Arnold and Peter Pilka. The contest was won by Frank LoPresto who won a ratchet wrench donated by Sam Hammer, refrigeration wholesaler. Refreshments were then served to celebrate the first anniversary of the chapter.

● MILWAUKEE CHAPTER, *Milwaukee, Wis., Jan. 7*—Following the business meeting, an illustrated lecture on refrigeration controls was presented by R. O. Perrine of Cutler-Hammer, Inc. It was a very enlightening talk, followed by a rather lengthy period of questions and answers. Refreshments were served through the courtesy of Cutler-Hammer by their representatives John Heuser, District Sales Mgr., and Mr. Archie.

● MONUMENTAL CHAPTER, *Baltimore, Md., Jan. 8*—On the educational program, the movie "Removing and Installing a Compressor or Condenser" was shown. Mr. Yamin led the discussion following the movie presentation, which eventually turned to a general discussion on refrigeration problems.

● MOUNT ROYAL CHAPTER, *Montreal, Que., Can., Dec.*—New officers of the chapter elected in December are: Raymond Brault, *President;* Mac Turner, *1st Vice-President,* Nap. Brossoit, *2nd Vice-President;* J. P. Delage, *Treasurer;* Roger Blanchard, *Secretary;* A. W. Snow, *Educational Chairman;* D. Greenberg, *Entertainment Chairman;* Gerard Gaudet, *Membership Chairman;* and A. Gillespie, *Sergeant-at-Arms.*

● PENINSULA CHAPTER, *Newport News, Va., Jan. 9*—The business was cut short to allow for a display of sound motion pictures and a lecture sponsored by the Detroit Lubricator Co., with Jack Strauss of New York City representing Detroit Lubricator as lecturer-engineer, and Walter Barbour handling the sound motion picture projector. Mr. Strauss displayed his knowledge of the theory and application of expansion valves with complete answers to all questions regarding repairs, applications, etc.

● ST. LOUIS CHAPTER, *St. Louis, Mo., Jan. 21*—The annual election of officers resulted in the following: Roland V. Vizgird, *President;* Sam Wolff, *Vice-President;* Harry B. Menaugh, *Secretarial Chairman;* R. S. Detweiler, *Treasurer;* Ralph M. Appel, *Secretary of Correspondence;* and Wm. Matejka, *Sergeant-at-Arms.* Board of Directors—Adolph Braun, Chairman, Leonard Vollman, Joe Pedrotti, George Becker and Charles Nunley. The new officers were installed in office immediately and newly elected President Roland Vizgird took the gavel and assumed control of the meeting. A showing of a motion picture was made after the business meeting was adjourned and refreshments wound up the gathering.

● SUNSHINE CHAPTER, *St. Petersburg, Fla., Dec. 12*—Paul Reed, Chairman of the International Educational Board, being on a vacation in the vicinity of the chapter, was prevailed upon to attend this meeting and talk to the members. This was a dinner meeting arranged in his honor, with 55 in attendance. Mr. Reed gave a splendid talk, then opened the discussion to the floor.

● TWIN CITIES CHAPTER, *Minneapolis, Minn., Jan. 7*—After a very interesting business session in which a number of matters of importance to the members were discussed, the entire meeting was invited by Dean Holmes to a local fire station where they were shown the effects of the use of methyl chloride in an aluminum coil, which he had found in operation. A short length of the liquid line and the drier and the liquid indicator had been removed from the system and sealed with a small amount of the refrigerant still in it and when this refrigerant was released to the atmosphere it immediately burst into flames and burned furiously. This was a most graphic demonstration of the dangers involved in mixing methyl chloride with aluminum, magnesium, zinc or their alloys.

LADIES AUXILIARY

● TRI-STATE AUXILIARY, *Huntington, W. Va., Dec. 29*—This meeting was devoted to the annual holiday dinner held in the Crystal Room at the Hotel Frederick. Following an enjoyable turkey dinner, vocal solos by Jean Fairbutn and Paul Dempsey were heard; a piano solo by Mrs. James Cottle and Mrs. Jean Albertsen Parker; and a piano-marimba duet by Mrs. Cottle and Mrs. Parker.

The January 4th meeting was held in the home of Mrs. Joe Campbell. Following a dinner, a brief business meeting occupied the balance of the evening.

● ROCKFORD AUXILIARY, *Rockford, Ill.*—In the words of secretary Evelyn C. Robertson. "The members of the Rockford Auxiliary have had some enjoyable gatherings the last few months. In November we were invited to the home of Mrs. V. R. Kruse in Woodstock, and were all interested in viewing Mr. Kruse's 'Modern Refrigeration Repair Service Shop.'

"Our December meeting was highlighted by a Christmas party with exchange of gifts and a dinner in keeping with the holiday season.

"At the January meeting, plans for the coming year were made."

SCHEDULE OF FILM SHOWINGS

AKRON, OHIO—Akron Chapter: March 12—No. 447. Contact Claude L. Wall, 23 Grand Ave, Akron 2, Ohio.

AURORA-ELGIN-JOLIET, ILL. — Tri County Chapter: February 15—No. 449-450; March 15—No. 452. Contact William J. McCarley, 607 N. Center St., Joliet, Ill.

BATON ROUGE, LA. — Louisiana Chapter: March 6—No. 452. Contact Mr. A. E. Kaiser, Sr., Acme Refn. Service Co., 1670 North St., Baton Rouge, La.

CHARLESTON, W. VA.—Charleston Chapter: March 11—No. 449-450. Contact H. G. Frame, 1105 Washington St. W., Charleston 2, W. Va.

CLEVELAND, OHIO — Cleveland Chapter: March 11—No. 445. Contact Robert Whitney, c/o Williams & Co., Inc., 3700 Perkins Ave., Cleveland 14, Ohio.

DENVER, COLO.—Mile High Chapter: February 17—No. 452. Contact E. C. Kimmel, 1524 15th St., Denver 17, Colo.

DUBUQUE, IOWA—Key City Chapter: March

"...and it weighs so much less!"

Important to the manufacturer of cabinet and other types of self-contained refrigeration units is the light weight of the new Mills Direct Drive Compressor. It makes possible lighter support structures, easier handling, and reduced transportation costs.

This saving in weight is possible partially through a reduction in size and the elimination of drive wheels and belts. Yet there has been no sacrifice in accessibility and ease of service and repair in the field. Through a number of remarkable engineering developments, the Mills Direct Drive Condensing Unit is more efficient than either hermetic or conventional belt-driven compressors.

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COMPRESSOR

First post-war addition to a distinguished family of air- and water-cooled condensing units

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5—No. 449-450. Contact Stampfer Farm & Home Store, Attn. Mr. R. E. Mueller, 7th and Iowa, Dubuque, Iowa.

DULUTH, MINN.—Head of the Lakes Chapter: March 3—No. 444. Contact Robert Alvar, 7 N. 20th Ave. W., Duluth, Minn.

EVANSVILLE, IND. — Evansville Chapter: February 27—No. 449-450. Contact C. E. Goad, 11 Main St., Evansville, Ind.

FLINT, MICH.—Motor City Chapter: March 11—No. 445. Contact Champ O'Heren, c/o Lifsey Distributing Co., 730 N. Saginaw St., Flint 3, Mich.

FORT WORTH, TEXAS—Cow Town Chapter: March 13—No. 449-450. Contact P. D. Cato, Texas Refn. Supply Co., 1410 Commerce St., Fort Worth, Texas.

FRESNO, CALIF.—Fresno Chapter: March 13—No. 447. Contact N. N. Leas, c/o Cond. Air & Refn. Co., 249 N. H St., Fresno 3, Calif.

HARTFORD, CONN.—Central Conn. Chapter: February 24—No. 444. Contact Stanley H. Baldwin, c/o Joseph Simons Co., 271 Sheldon St., Hartford, Conn.

HUNTINGTON, W. VA.—Tri-State Chapter: March 11—No. 446. Contact A. W. Albertsen, 314 11th St., Huntington 14, W. Va.

INDIANAPOLIS, IND.—Indianapolis Chapter: March 11—No. 444. Contact J. A. Salter, 3623 E. Michigan St., Indianapolis, Ind.

JACKSON, MISS.—Magnolia Chapter: February 26—No. 445. Contact A. E. Shafer, P. O. Box 1509, Jackson 112, Miss.

LA CROSSE, WIS.—La Crosse Chapter: March 7—No. 444. Contact George Brenstein, 408 Copeland Ave., La Crosse, Wis.

LIMA, OHIO—Lima Chapter: February 20—No. 446; March 20—No. 447. Contact Allied Supply Co., Attn. Dan Shively, 122 S. Union St., Lima, Ohio.

LOGAN, UTAH—Utah Aggie Chapter: February 19—No. 448-451; March 5—No. 446; March 20—No. 444. Contact J. Cecil Sharp, c/o Utah State Agricultural College, Logan, Utah.

LONG BEACH, CALIF.—Long Beach Chapter: March 12—No. 448-451. Contact L. K. Willis, Willis Refrigeration, 1110 E. Broadway, Long Beach, Calif.

LOS ANGELES, CALIF.—Los Angeles Chapter: February 26—No. 445. Contact Merle F. Stutzman, 3464 W. First St., Los Angeles 4, Calif.

MARION, IND.—Central Indiana Chapter: February 19—No. 443; March 19—No. 445. Contact Francis Holloway, 704 Whites Ave., Marion, Ind.

MEDINA, OHIO—Medina Chapter: March 12—No. 445. Contact Orra Nichols, Jr., Nichols Elecl. Equipment Co., Route 1, Medina, Ohio.

MIAMI, FLA.—Greater Miami Chapter: February 27—No. 447. Contact Orville W. Brown, 1044 N.W. 65th St., Miami 38, Fla.

MONTGOMERY, ALA. — Montgomery Chapter: February 17—No. 449-450; March 17—No. 452. Contact J. B. Harris, c/o Alabama Power Co., 111 Dexter Ave., Montgomery, Ala.

NEW HAVEN, CONN.—Elm City Chapter: March 7—No. 449-450. Contact T. B. Howell, United Illuminating Co., 221 George St., New Haven, Conn.

OMAHA, NEBR.—Missouri Valley Chapter: March 20—No. 448-451. Contact C. M. Flohr, c/o United Motors Service, 27th Ave. and Harney St., Omaha, Nebr.

PEORIA, ILL.—Illinois Valley Chapter: April 11—No. 448-451. Contact Bryson Roth, 300 S. Washington St., Peoria, Ill.

PENSACOLA, FLA.—Pensacola Chapter: February 18—No. 442; March 4—No. 438-439; March 18—No. 440-441. Contact Gillis C. Pugh, c/o Coca Cola Bottling Co., 1625 N. Palafox St., Pensacola, Florida.

PORTLAND, ORE. — Multnomah Chapter: February 20—No. 446; March 20—No. 447. Contact Wayne C. Miller, c/o Minneapolis Honeywell Regulator Co., 122 N.E. Broadway, Portland, Ore.

READING, PA.—Reading Chapter: February 20—No. 448-451; March 20—No. 449-450. Contact O. A. Larson, c/o Larson Supply Co., 326 Buttonwood St., Reading, Pa.

ROCHESTER, N. Y. — Rochester Chapter: March 12—No. 360. Contact John F. Eggleston, c/o Ontario Metal Supply Co., 91 Mt. Hope Ave., Rochester, N. Y.

ST. PETERSBURG, FLA.—Sunshine City Chapter: Mar. 4—No. 445. Contact R. B. Schroeder, Florida Power Corp., St. Petersburg 1, Fla.

ST. LOUIS, MO.—St. Louis Chapter: February 18—No. 440-441; March 18—No. 442. Contact Adolph Braun, 4226 Lafayette St., St. Louis, Mo.

SALT LAKE CITY, UTAH—Beehive Chapter: February 27—No. 452. Contact W. W. Walker, c/o G. E. Supply Corp., 310 W. 2nd South St., Salt Lake City, Utah.

SAN DIEGO, CALIF. — San Diego Chapter: February 20—No. 447; March 20—No. 449-451. Contact C. E. Anderson, 209 West E St., San Diego 1, Calif.

SAN FRANCISCO, CALIF.—Golden Gate Chapter: February 27—No. 446. Contact Ray Winther Co., Attn. George N. Eskra, 1245 Folsom St., San Francisco 3, Calif.

SANTA ANA, CALIF.—Orange County Chapter: February 20—No. 445; March 20—No. 446. Contact R. L. McCain, 615 E. Bishop St., Santa Ana, Calif.

SCRANTON, PA.—Scranton Chapter: March 5—No. 466. Contact W. D. Franklin, 1632 Sanderson Ave., Scranton 9, Pa.

SPRINGFIELD, MASS.—Western Mass. Chapter: February 25—No. 448-451. Contact Harold C. Lambert, Room 449, 31 Elm St., Springfield 3, Mass.

SPRINGFIELD, MO.—Springfield, Mo., Chapter: February 26—No. 443. Contact Hoffman Supply Co., 810 Boonville, Springfield, Mo.

TAMPA, FLA.—Florida West Coast Chapter: March 13—No. 438-439. Contact W. A. Bingham, Sr., 204 E. Columbus Drive, Tampa 3, Fla.

TOLEDO, OHIO — Greater Toledo Chapter: March 12—448-451. Contact Paul D. Sizer, P. O. Box 69, 1216 Adams St., Toledo, Ohio.

TRENTON, N.J.—Trenton Chapter: February 19—No. 443; March 19—No. 444. Contact Harry H. Jaeger, 216 S. Warren St., Trenton, New Jersey.

TULSA, OKLA.—Oil Capitol Chapter: February 26—No. 449-450. Contact K. G. Wight, c/o K & M Supply Co., 208 N. Denver, Tulsa 3, Oklahoma.

WATERBURY, CONN.—Waterbury Chapter: March 3—No. 443. Contact A. M. Barbiero, c/o The Naugatuck Dairy I. C. Co., 34 N. Main St., Naugatuck, Conn.

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Means:

LOWER TEMPERATURES
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With the Thermobank, temperatures of 32° F. to -40° F. and below can be maintained as easily and with the same freedom from frost as temperatures of 40° F. in a conventional system. Operating with practically frost-free coils, Thermobank maintains the desired low temperatures with higher back pressures, less temperature differential between air and coils; and consequently higher humidity, less drying and more efficient compressor operation.

Essentially, the Thermobank System of Automatic Defrosting consists of a forced convection cooling unit, automatic time controls and a heat reservoir. A portion of the heat extracted during the refrigeration cycle is banked in the reservoir from which it is released to the refrigerant during the defrost cycle.

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specify KRAMER

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HEAT TRANSFER EQUIPMENT
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CESCO's Healthguard Fume Kit (No. 605) offers *triple protection* to refrigeration servicemen. Quick-change filter cartridges assure safety against ammonia, methyl-chloride and sulphur-dioxide fumes . . . *all in one convenient carrying case.*

The soft molded rubber face-piece of the fume mask, and the adjustable headgear assure a gastight, comfortable fit for every wearer. Large safety glass lenses give perfect visibility.

The CESCO Healthguard Kit provides *economical* protection because it is *moderately* priced.

Write for CESCO'S *No. 605 Safety Bulletin for complete information*

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CESCO
CESCO FOR SAFETY

LOW TEMPERATURE SYSTEMS

(Continued from page 40)

Most oils used at low temperatures have pourpoints at much higher temperatures. For instance, some oils recommended for use at —80° F. have pourpoints close to —40° F. This is satisfactory because usually a small percentage of oil is mixed with the refrigerant and circulates with it. However, if an expansion valve expansion chamber serves as a separator for the oil and free oil fills the chamber, it will congeal at low temperatures and make the expansion valve inoperative. To prevent this, the expansion valve outlet should be pointed down so that oil will not trap in the expansion chamber.

One company dealing in low temperature two stage units found it advisable to limit the inlet liquid temperature to the expansion valve to a minimum of —30° F. due to the oil congealing.

We've learned a lot about low temperature refrigeration and its usages during the last few years. We expect to go much further, but the success of this field of refrigeration in the future as in the past will depend on the efficiency of the service engineers.

* * *

REVERSE CYCLE HEATING

(Continued from page 32)

plished with such a system. Fig. 4 shows a simplified diagram of the essential parts of such a system.

Sources of Heat

The heat pump, unlike other heating systems, does not derive most of its delivered heat from some other form of energy, such as chemical, electrical, etc. Truly, electric power operates the motor and this energy is changed into heat and delivered mostly to the heating coil. The amount of heat delivered, however, usually is 3 to 6 times that required as electrical energy, to operate the motor. This additional heat must be secured from some other available supply. All substances above absolute zero (460 F. below zero) contain some heat. It is the job of raise it to higher intensity by transferring to a refrigerant and compressing, so that the heat pump to remove some of this heat, it can be supplied to air, water or some other product at higher temperature.

The less the temperature difference between the condenser and the evaporator, the more heat will be delivered, per kilowatt hour consumed by the motor. Outside air can be used as a heat source until the temperature goes down to twenty or more degrees, when the low pressure at which the evaporation takes place seriously reduces efficiency and capacity. City or well water can be sprayed on the coil as an additional heat source.

Well water is an excellent source of heat where it is available in sufficient quantity. It only needs to be pumped through a heat exchanger or over the evaporator coil or sprayed on the air cooling coil.

The earth may be used as a heat source in some localities. This heat can be picked up by water filtering through the soil, and the water brought through heat exchangers, giving up the heat, and again returned to the earth.

Experiments are being made to extract heat from water by freezing ice. For each pound of ice, 144 Btu. would be transferred to the vapor. The ice might also have commercial or utility value.

In establishments which discard heat to water or the atmosphere from any commercial or industrial process, this heat can be readily reclaimed by the heat pump. Many establishments discard enough heat from refrigeration condensers alone, to supply a substantial heat load.

In the majority of space conditioning systems, it is common practice to install condensing equipment sufficient to handle the estimated cooling load. Usually this equipment will be sufficient to extract sufficient heat from outside air to carry the heating load. As the air temperature falls to the point where the equipment can no longer handle the load from this source, heat is supplied by water sprayed on the coil, either from city mains or wells.

Conclusions

The heat pump is a practical method of supplying heat for air conditioning, process or water heating, when equipment suitable to the load is selected. It can alternately add or remove heat in response to automatic or manual control. It can supply energy in the form of heat, in the ratio of 3 to 6 times that required for operating the compressor. Its economy is best when the difference between condensing and evaporating temperatures is low.

The chief difficulties to be overcome are frosting of the air cooled coil, excessively low suction pressures, and limited supply of heat in recoverable form.

New ATTIC FAN TIMER by Paragon

HERE'S a new member of the Paragon family . . . the AF Series for timing attic and window fans.

Entirely new in design, this timer is offered in two time ranges, 0-10 hours and 0-20 hours, each fully adjustable to any position on the dial . . . a real convenience for the user.

Equipped with a quiet Telechron motor and an improved switch, the timer is rated for high capacity, and will handle a ½ HP motor. Beautifully finished drawn aluminum case, anodized, with dial and pointer protected by clear Plastacele.

Underwriter approved, all electric, no springs, mounts easily to Handy box or single gang switch box, or may be surface mounted with conduit connections into the bottom of the timer. The setting may be changed at will without harming the instrument. Timer motor runs only when timer is actually in operation.

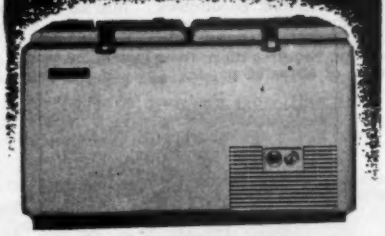
AT ONLY $9.75 AN OUTSTANDING VALUE

Get your orders to your jobber—now and start planning installations early. Complete data sheet on request.

PARAGON ELECTRIC COMPANY
1636 Twelfth Street
TWO RIVERS, WISCONSIN

Paragon Two Rivers Wisconsin
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1935

LOOMING BIG IN THE MODERN AMERICAN LIVING SCENE . . .



. . The BEN-HUR Farm & Home Freezer

Engineered and designed to bring the health-building benefits of fresh-frozen foods to the rank and file of better-living conscious Americans. Hundreds of thousands of new homes now planned and building are present prospects for a generous-size, dependable, quality-built BEN-HUR Farm and Home Freezer.

Service-wise dealers, anticipating increased customer good-will and confidence will feature and recommend the new "BEN-HUR" for these "Stand-Out" Quality Features.

★ ALL STEEL CONSTRUCTION
★ LIFETIME TESTED
★ ALL FOOD SURROUNDED BY COLD
★ A SIZE FOR EVERY FAMILY
★ THICK INSULATION (Hermetically Sealed)
★ MODERN, SMART DESIGN
★ ECONOMY-ENGINEERED

BEN-HUR MFG. CO.
Continuous Manufacturing Since 1911
634 E. Keefe Ave. Dept. RS Milwaukee 12, Wis.

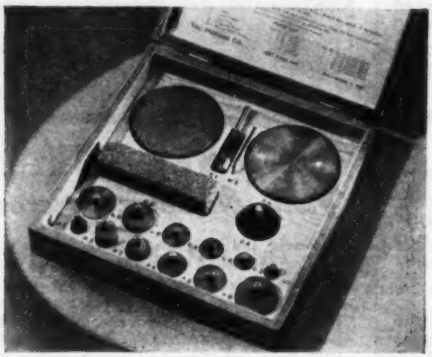
BEN-HUR FARM & HOME FREEZERS

NEW and IMPROVED EQUIPMENT

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

Grinding Kit

RESEATING discharge and piston valves is a job that every serviceman encounters from time to time. For satisfactory results this precision operation requires more than a piece of abrasive paper.



The Premier Company, Baltimore, Md., has developed a self-aligning valve grinding kit containing abrasive wheels and lapping discs for valve ports ¼" to 1¼" in diameter. The kit also includes two 3" cast iron lapping blocks for lapping flat surfaces. In addition to the lapping equipment, a valve testing device is included to permit testing the valve before it is again put into service. The abrasive and lapping wheels can be used by chucking into a regular drill press or, because of the self-aligning feature, they may be successfully used with a portable electric drill.

The complete kit comes in a hinged and fitted felt lined wood case with complete instructions for reconditioning both recessed and flush seats in discharge valve plates and pistons.

Aluminum Solder

ALL-STATE WELDING ALLOYS CO., INC., 96 West Post Road, White Plains, N. Y., announces the immediate availability in unlimited quantities of a still lower-temperature rub-on solder that opens up a new range of soldering applications for aluminum work. This addition to the All-State line of low-temperature welding and brazing alloys is an economical alloy that is applied without flux.

Prime applications of this alloy are developing rapidly among companies requiring the assembly of aluminum shapes and wire in production work. As used on aluminum castings, this alloy has good matching color and fair corrosion resistance. It is recommended for filling and soldering where tightness is essential but strength is unimportant; and also for the repair of blowholes; for building up worn surfaces on aluminum castings; as well as for salvaging and making changes on foundry patterns. It is also excellent for repairing cracks in aluminum cylinder heads and for filling in surface defects where high temperatures must be avoided. This alloy is known as All-State No. 39 aluminum solder rod.

Calculator

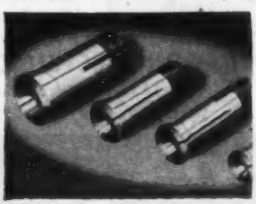
GENERAL Engineering & Mfg. Co., St. Louis, have designed a new "cooling load calculator" of the double disc plus a hairline type. It is arranged so that an accumulative total Btu. per hr. of all the various heat load sources can be read directly from the scale.

The calculator is made, in the conventional manner, of two rotating discs with a movable hair line. The smaller of the two discs is divided into nine sections, each of which is devoted to one type of heat source. The large disc is devoted to the total Btu. per hour scale. As the Btu. load from each individual source is calculated on the smaller disc, the total is automatically accumulated on the larger disc.

Instructions for operating are contained on the back of the calculator. It is easy to understand and quick to operate.

Collets

A NEW line of precision draw-in collets made of brass has been announced by the South Bend Lathe Works.



Although they are not intended to replace the more expensive hardened steel col-

LEAKY TERMINALS

ON ALL

SEALED CROSLEY F-12 UNITS

EASILY REPAIRED IN A FEW MINUTES WITHOUT OPENING THE COMPRESSOR

SET OF THREE TERMINALS (PART NO. 1020).....$6.75

INSTALLATION TOOL (PART NO. 23051).....$1.65

★ ★ ★

FLOAT REPLACEMENTS

Part No. 2000—Westinghouse (4 hole mounting plate).
Part No. 2010—Westinghouse (3 hole mounting plate).
Part No. 2020—Gibson.
Part No. 2030—General Electric (monitor top models DR-1 and DR-2).
Part No. 2040—For general replacement (with undrilled mounting plate).

These parts are used to replace defective high side floats on household units. They have regular charging set connection, cap tube setup, internal strainer and exact mounting plate. Solid brass construction—neat appearance. Quickly and easily installed. Each.....$6.75

★ ★ ★

IMMEDIATE DELIVERY — MONEY BACK GUARANTEE

Order Through Your Supply Wholesaler or Write Direct.
Write for Bulletin No. 14 Listing Other Sealed Unit Parts.

LOOK IN THE NEXT MONTH'S ISSUE FOR OTHER SEALED UNIT PARTS

SEALED UNIT PARTS CO.

3097 Third Ave. New York 56, N. Y.

LOOK AHEAD. Can you see ANYTHING small about refrigeration for the future? Doesn't EVERY phase and branch promise something BIG for men who are themselves BIG enough to grasp the opportunities?

THE U.E.I. PROGRAM OF BALANCED TRAINING (home study plus intensive shop practice) is designed for men who want to grow BIGGER in refrigeration and air conditioning knowledge and skill. It's for men either in or wanting to get into refrigeration. It is the program of training which is identified with the success of many a man who is filling some pretty big shoes in the industry today. It's the training program which, since 1927, has helped small men grow big in refrigeration. . . . If you're planning to get somewhere in this field, use the coupon below as a starter.

FREE FACTS

UTILITIES Engineering Institute

1314 W. Belden Ave.
Dept. 45, Chicago 14, Ill.

Please give me more information about Refrigeration and Air Conditioning Training, as suggested in your "Refrigeration Service Engineer" February 1947 advertisement.

NAME .....

ADDRESS .....

CITY..... ZONE..... STATE.....

lets, they are manufactured to the same exacting tolerances and have some advantages. Their low cost makes them especially desirable for odd sizes that are used only occasionally. However, it is said that they will give good service and can be used for short run production jobs. When worn, a brass collet can be re-bored to a larger diameter. Another advantage of brass collets is that they can also be machined for holding tapers or irregular shapes.

The brass collets are made in standard fractional sizes, 1/16" capacity up to the maximum capacity of the collet in increments of 1/64". They are also available with decimal hole sizes for any diameter between .0625" and the maximum capacity of the collet. Collets with metric hole sizes are supplied in increments of ½ mm, any size between 1.5 mm and the maximum metric collet capacity.

Designed primarily for use with South Bend Lathes, these collets are available in four styles and can be purchased for use with any machine which they will fit. For more complete information and specifications, request Bulletin No. 83 from the South Bend Lathe Works, 207 E. Madison Street, South Bend 22, Indiana.

Uniflare

DEVELOPMENT of a new two-piece, completely self-flaring tube fitting, which may be applied to many varieties of tubing, and known as the Unifiare, embodies the advantages of both compression fittings and flared fittings. According to the manufacturer it may be used effectively with tubing of various metals, including copper, aluminum, monel, plastic, "Bundyweld" and other varieties of steel, within a wide range of wall thickness.

Plain end tubing is inserted in the fitting and made up in the conventional manner. The tube is self-extruded and self-flared by simple wrench action during the makeup. The fitting is so designed that the nut, body and thrust collar combine to produce the same action as an extrusion press —the thrust collar shearing from the nut when wrench pressure is applied.

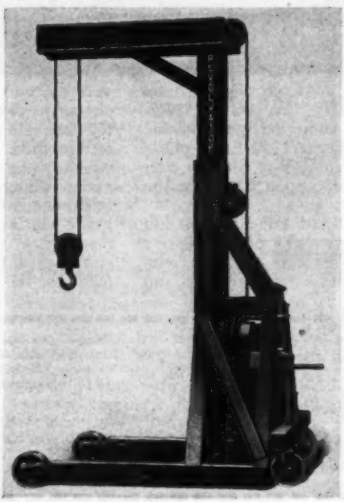
What actually happens is that the nut acts as the ram; the body of the fitting acts as the die; the thrust collar acts as the dummy block and compression member to grip the tube and force it into a 37 degree flare. The shape of the flare is important in making a sound joint. The extrusion and coining action of the parts produces a leakproof joint that is reinforced against pressure and vibration and the manufacturer says that it can be made up innumerable times without danger of damage to the original flared end of the tube and without losing its positive seal. It is equally adaptable to soft and steel tubing. Unifiare is made in sizes from ⅛ inch to ¾ inch.

Portable Crane

ILLUSTRATED herewith is an ingenious portable crane brought out by Revolvator Co., North Bergen, N. J., manufacturers of the well-known line of Revolvator portable elevators and Red Giant Liftrucks.

This crane is so designed that the upper part may be folded down to permit moving the crane under low doorways or other overhead obstructions. The folding feature, which also facilitates shipping in more compact form, is effected by the same crank and cable that is used for hoisting material. That is, to place crane in upright or extended position ready for operation, you simply wind cable on drum by means of the crank till the pulley at lifting hook is against frame, then keep on winding and crane will assume upright position, to be locked in place by inserting pins through stationary and movable frames.

To lower crane, first raise hook to top, then place the interchangeable crank handle on brake shaft, remove locking pins and lower crane to folded position slowly and gently by relieving pressure gear for lifting on brake drum through the crank.



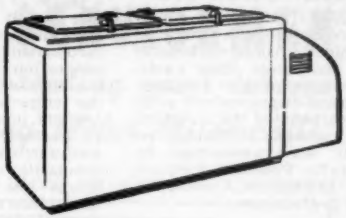
This crane is equipped with low very heavy loads. The crank handle is placed on the center shaft or lower shaft according to weight to be lifted.

The maximum capacity of this Revolvator portable crane is 4000 lbs. The relatively light weight of this piece of material handling equipment makes it extremely handy in machine shops and repair shops.

The crane is equipped with floor lock, and steering handle geared to front wheels which turn easily on Timkin roller bearings.

SANITARY FREEZER CABINETS

The Finest Cabinet For Your Best Condensing Equipment



12.5 Cubic Foot Models Now Available Complete, less Condensing Unit

Attractively modern in style, heavily built with steel welded frame, rich in many unusual and exclusive quality construction features, SANITARY Freezer Cabinets are now in limited production for shipment on a 30- to 60-day basis. Each cabinet is complete with freezer plates, cold control and "Freon-12" expansion valve requiring merely installation of your own condensing unit. Typical of SANITARY design and engineering, every detail in these Freezer Cabinets is aimed at long service life, high efficiency in food freezing and storage—at lowest operating costs.

PLACE YOUR ORDER for these "top quality" SANITARY Freezer Cabinets TODAY.

SANITARY REFRIGERATOR CO.
Manufacturer
Fond du Lac, Wisconsin

Ice Refrigerators For More Than 40 Years
Quicfrez Farm Locker Plants Since 1939

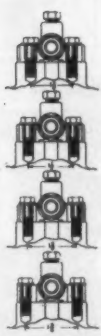
Another SUPERIOR FIRST

The **"UNI-HOLE" Flanged Compressor Valve**

Has Universal bolt holes for use with 5/16" bolts or cap screws, to facilitate installation on compressor flanges having 1-3/8", 1-1/2", 1-5/8", or 1-3/4" centers.

Simply install the "Uni-Hole" Valve in its proper position . . add the two heavy washers (supplied with each valve) between the flange and bolt, or cap screw head . . then tighten. That's all there is to it!

Ask your Jobber to show you the SUPERIOR "Uni-Hole" Flanged Compressor Valve. You're sure to like it! It's a natural . . . and besides saving you installation time, it reduces your stocking problem. *One size does* the work of four!

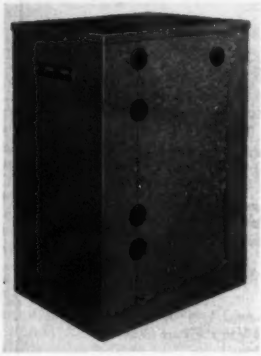


The diagrams at the right tell the story.

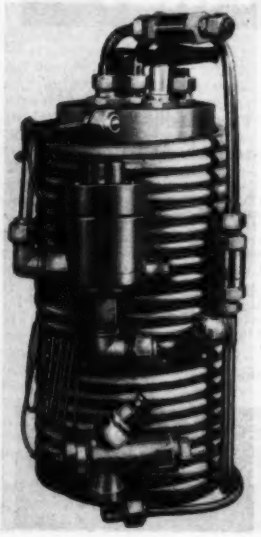
SUPERIOR VALVE & FITTINGS COMPANY
PITTSBURGH 26, PENNSYLVANIA
OFFICES IN PRINCIPAL CITIES • STOCKS CHICAGO (6) • LOS ANGELES (15) • JOBBERS EVERYWHERE

Cooler-Carbonator

DEVELOPMENT of a new completely automatic, combination cooler-carbonator unit that cools plain water, carbonates at low temperatures and dispenses both plain and carbonated water, cooled to a constant 40 F., has recently been announced by Temprite Products Corporation, 43 Piquette Avenue, Detroit 2, Michigan.



Operating on the dual principle of absorption and diffusion, the new combination unit is said to deliver up to 220 gallons (5620 glasses) of highly carbonated water from a single 20 pound cylinder of CO_2 gas. It is said that over 300 glasses of either plain or carbonated water (or any proportion of each) may be dispensed in one hour, the temperature having been brought down from 80 to 40 F. Further, according to the manufacturer, the new unit is compactly designed and requires less than 10 square inches base area and 15 inches vertical clearance for installation.



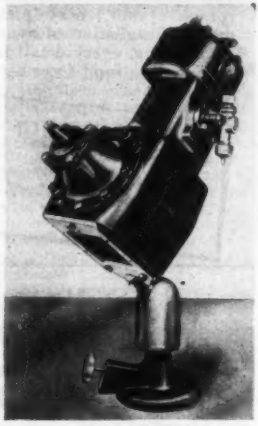
In operation, incoming plain water flows through a double-tube water cooler which is wrapped around a stainless steel carbonator shell. The cooled water enters the carbonator shell through a specially designed spray head which is said to produce a fine mist inside the shell. Simultaneously, CO_2 gas is introduced into the carbonator shell, under the carbonated water level, through a gas diffusing element. Thus the cold water travels through a CO_2 gas-charged atmosphere in fine mist form to accomplish primary carbonation. It then collects at the bottom of the carbonator shell where it is again subjected to CO_2 gas through the diffusion action. The cooled carbonated water is then drawn from the bottom of the shell by means of a stainless steel connecting tube.

The carbonator operates independently of city water pressure, at 70 pound CO_2 gas pressure and does not entail loss of CO_2 gas through vents or purging devices, according to the manufacturer. The complete system consists of the cooling and carbonator unit and includes all necessary refrigeration valves, check valves and fittings, motor pump and relay assembly. A carbonator unit is available separately, wherever a satisfactory water cooling system is already in use and an insulated cabinet unit can be supplied for remote installations or in unprotected or uninsulated compartments.

Powrarm

A UNIVERSAL work positioner to hold and position virtually all kinds of benchwork quicker and easier for production, assembly, service and maintenance, is in mass production by the Garfield Engineering Corporation of Kansas City, Missouri.

The Powrarm Universal Positioner increases efficiency and productivity of worker by permitting him to work with both hands free. Conserves workman's energy by properly positioning work and reduces hazard of injury and damage. Affords ready access to all sides of work. The Powrarm Positioner holds light or heavy work and permits turning 360° at any angle or horizontal or axial planes and 180° on vertical planes. Change position of work quickly and easily and lock it by fingertip adjustment of pressure control knob. A new principle of pressure applied to a ball and socket joint makes this possible. Powrarms are produced in both hydraulic and mechanical models.



A line of universal attachments available with the Powrarm permit mounting many types of work including carburetors, distributors, speedometers, generators, magnetos, armatures, radio chassis, typewriters, airplane cylinder heads, castings, machined parts, compressors, adding machines, taxi meters, transmissions, sewing machines, vise work and hundreds of other items including welding operations. However, it is possible for individual businesses to use attachments developed for their own particular needs. It is the aim of the manufacturer to standardize, as far as practicable, uses of the Powrarm Positioner.

REFRIGERATION SERVICEMEN

Building good will and increasing your service business is possible by taking Meter-Miser calls.

Locating the leak and recharging is one of the services you can render to Meter-Miser owners if you have a supply of **HERVEEN.**

Customers and servicemen alike are finding this refrigerant meets their standards of performance when used in Meter-Miser units. When a loss of refrigerant has put the unit out of service, your job becomes a routine call with a supply of HERVEEN for your immediate use.

HERVEEN

the IDEAL REPLACEMENT REFRIGERANT

Send for bulletin on "Procedure for Recharging Meter-Misers with HERVEEN"

For deliveries, see your local jobber or write to

Conservative Gas Corporation, Modern Gas Division

MANUFACTURERS AND REFINERS

1084 Bedford Ave. Brooklyn 5, New York

STOP

TERMINAL LEAKS! COMPLETE KIT.

(3 Terminals)

$5.50

PAT. PENDING

Lower Prices in Quantity

Please Mention Jobber's Name

Coldspot Couplings and Dome Gaskets. Immediate Delivery. 25 cents each in lots of 10

WAGNER REPLACEMENT TERMINALS

A research development designed to repair terminal leaks on sealed units, instantly and permanently on the job—

IN 5 MINUTES

No special tools or equipment required. Now available for Crosley F 12. Soon available for Frigidaire, Westinghouse, Norge, Kelvinator, and TECUMSEH (Chieftain) UNITS.

Territories Open to Manufacturers Representatives

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Firm .....

Address .....

Jobber .....

Send Check or Money Order
We Will Ship Prepaid

No. of Complete Kits..... No. of Couplings.....

No. of Dome Gaskets..... ☐ C.O.D. ☐ Pre-Paid

News of the Equipment Industry

N.A.R.C. AND UNION DISCUSS MUTUAL PROBLEMS IN INDUSTRY

A MEETING was held January 6-7 at the Statler Hotel, Washington, D. C. between the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada as representing the majority of the organized refrigeration mechanics, and the National Association of Refrigeration Contractors as representing the majority of organized refrigeration contractors, wherein the problems of mutual interest pertaining to the refrigeration industry were discussed. The result of this meeting was that the United Association recognizes the National Association of Refrigeration Contractors as a national association representing the refrigeration contractors.

It was agreed that the two associations will work closely together on all matters of mutual interest when legally possible which shall include the training of apprentices and journeymen employed in the refrigeration industry. Future meetings will be held by representatives of both organizations for the purpose of making a further study of conditions in the industry in order to make recommendations that will create better labor relations.

To Become International Association

The National Association of Refrigeration Contractors is to become international in scope, according to plans now under way.

When it was organized a year ago, provision was made for membership to apply only to refrigeration contractors in the United States. Since then, however, a great deal of interest has developed for membership by Canadian firms. Several inquiries have been received, also, from South American firms.

Plans are now in progress to amend the Constitution and By-Laws at the annual meeting next fall to make the association international. Meanwhile, applications can be accepted from firms outside the United States for a membership carrying all privileges except voting power. The honor of being the first one in on the new plan goes to Reliable Refrigeration, Limited, of Toronto, Ontario, Canada, represented by Donald Fowler.

Officers of Wisconsin Group

Newly-elected 1947 officers for the Refrigeration Contractors Association of Wisconsin are E. F. Anderson, president; Otto Braun, Vice-president; Fred Boehme, secretary; Henry Rozga, treasurer.

The association, with headquarters in Milwaukee, recently launched a membership drive. 14 new members were added, bringing the membership to 25.

The association is especially active at present on code, license, and unfair trade practice matters. It is affiliated with N.A.R.C.

S S S

FISKE RESIGNS AS SECRETARY

ANNOUNCEMENT was made on January 15th by R. H. Money, President of The American Society of Refrigerating Engineers of the resignation of David L. Fiske, Secretary of that organization since 1927.

Mr. Fiske has been for years an active figure in this industry. His work for the Society included founding and editing the Refrigerating Data Book, from its first edition in 1932. He has assisted in the formation of many of the sections of the ASRE and in the work of its standardization and other technical projects.

Mr. Fiske graduated in Mechanical Engineering from the Massachusetts Institute of Technology in 1920. He has a Masters Degree in thermodynamics from the University of Illinois and a PhD. in Industrial Engineering, specializing in statistics, from Columbia University. His study "The Demand for Refrigeration" has become a common reference for information on the economics of this industry.

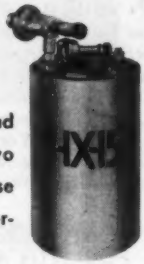
During the war Fiske was in the War Department in Washington as a Major, engaged in work connected with production control and later in the refrigeration division of the Quartermaster Corps. In this capacity, he was sent on a mission to the

MINIMUM **PRESSURE DROP** with
HEAT-X CAST ALUMINUM
HEAT EXCHANGERS

Shown are two models of Heat Exchangers —various sizes available. Both liquid and suction are copper tube. Ideal for use as water cooled capacity boosters on air cooled units. No internal joints—no by-pass.

MORE BTU's PER WATT with
HEAT-X CAST ALUMINUM
LIQUID COOLERS

Here is one of Heat-X Coolers you can select from a range of sizes.



No freeze-up damage and no short cycling are two outstanding features. These Coolers combine top performance and low cost.

WRITE AT ONCE FOR HEAT-X ENGINEERING SPECIFICATIONS AND CAPACITY TABLES

Orders Promptly Shipped

THE HEAT-X-CHANGER CO., INC.
115 Lexington Avenue, New York 17, N. Y. Brewster, New York

REMOTE WATER COOLERS

For drinking water bubbler service, glass filler service, photographic developing, etc. Compact for floor, wall or ceiling installation. Capacities 6 to 25 gallons.

Also available now—cafeteria glass filler coolers, self-contained type bubbler coolers for offices, stores or factories. Write for latest data.

DAY & NIGHT
REFRIGERATION DIVISION
DAY & NIGHT MFG. CO.
One of the Dresser Industries
MONROVIA, CALIFORNIA
SOLD THROUGH REFRIGERATION WHOLESALERS AND DEALERS

Southwest Pacific last year. He has continued as a consultant to the War Department on refrigeration matters since he returned to civil life at the end of 1945.

* * *

HIRSCH TO AMERICAN COILS

S. R. HIRSCH, recently elected director of the American Society of Refrigeration Engineers, has resigned as chief engineer of the Brunner Manufacturing Company, Utica, to accept the vice presidency of the American Coils Company of Newark, N. J. Mr. Hirsch assisted in organizing the Central New York Section, American Society of Refrigeration Engineers, and was chairman for two terms.

* * *

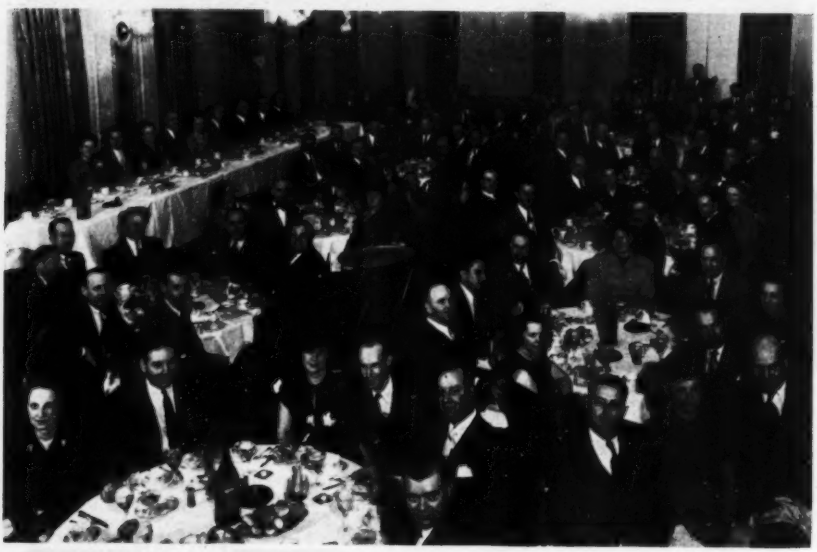
REWA PROGRAM COMPLETED FOR 12TH ANNUAL MEETING

THE Refrigeration Equipment Wholesalers Association twelfth annual meeting will be held March 20, 21 and 22 at the Edgewater Beach Hotel, Chicago.

While the Board of Directors of the association will meet March 19, the membership meeting will formally open on March 20 for registration in the morning and regional group meetings in the afternoon.

The past presidents will be honored at a cocktail party, dinner and entertainment on Thursday evening at 7:00 P.M. No speech making will be the order for the evening, the occasion being expressly reserved for an evening of goodfellowship and to honor the past presidents.

The entire membership of the association will convene as a group at a closed meeting on Friday morning. The meeting will be preceded by a breakfast for the members and their ladies. At noon a luncheon will be held. The afternoon session will receive the nominations for four Directors, to succeed present Directors whose terms expire. Nominations to be presented include George J. Roche, Baltimore, Md., Region 3, nominated to succeed himself; H. W. Holt, Pittsburgh, Region 5, to succeed T. I. Glou; J. P. Glass, Chicago, Region 6, to suceed H. W.



The Mid-West Refrigeration Equipment Wholesalers Association held an annual meeting at the Hotel Phillips, Kansas City, Mo., January 10. Officers elected were: E. L. Tramposh, Chairman; Frank Pond, Vice-Chairman; L. W. Krueger, Secretary; and Joe Bickel, Treasurer. A joint meeting and luncheon with the manufacturers was held at the Hotel Phillips, and a cocktail party and banquet at the Hotel Muehlbach. The banquet is pictured above. In addition to entertainment, the banquet featured George Taubeneck as speaker. On January 11, R. B. Chapman of Revere Copper and Brass Co., presented a sound film on copper and brass at the Hotel Muehlbach. A second luncheon with the manufacturers was held during the day.

Small; R. L. Hinshaw, San Francisco, Region 9, to succeed Harold G. Stern. Following the election, the Board of Directors will hold their first meeting and elect officers for the ensuing year.

The annual banquet and dance will be held Friday evening.

The third business session will be held as a closed membership meeting on Saturday morning and will include any unfinished business, committee reports, reports from regional groups and a general membership discussion.

S S S

RECEIVER IS APPOINTED FOR STANGARD-DICKERSON

BY ORDER of the United States District Court of the District of New Jersey, a receiver was appointed for the Stangard-Dickerson Corporation on January 20, 1947.

The company is not in bankruptcy but has petitioned for an arrangement under Chapter XI of the Bankruptcy Act of 1938. Under the order dated January 20, 1947, the receiver is authorized and directed, among other things to do as follows: "The said receiver is hereby authorized and empowered to administer the proper assets and business of the said debtor and to preserve, maintain and keep the same in good condition and repairs; to continue to operate, manage and control the business of the debtor for an indefinite period and, in connection with the same, to pay, until further order of the court, all necessary current expenses and to make all necessary purchases in operating, managing and preserving the assets of the debtor and conducting its business."

S S S

NEW KEROTEST OFFICERS

WALTER G. SWANEY was elected president of Kerotest Manufacturing Company, Pittsburgh, Pa. and Stanley J. Roush became executive vice-president at a special meeting of the board of directors on January 23. Edward G. Mueller, former president, became chairman of the board. Other officers elected included: A. W. Anderson, works manager and director of purchases, and Ralph E. Lane, secretary-treasurer.

Mr. Swaney, Kerotest's new president, was one of the original members of the firm, having started as a clerk in 1905. One of the company's earliest products was a line of precision brass valves for compressed

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gas cylinders. In the early 1920's when the refrigeration and air conditioning industries were just becoming known, Kerotest applied its experience in producing valves for gas control to development of a line of forged brass valves and fittings for all types of refrigeration and air conditioning service. Kerotest was the original producer of the diaphragm packless valve.

Since this early beginning, with the industry's first attempts at commercially feasible electric refrigeration, Kerotest has grown with the volume of the demand.

AIRTEMP PROMOTES HAEFNER

E. W. HAEFNER has been appointed an assistant general sales manager of the Airtemp Division of Chrysler Corporation, it was announced by H. A. Malcom, vice president and general sales manager of the division.

E. W. HAEFNER

Until his appointment, Mr. Haefner served as manager of the parts and service department. In his new position, he will supervise the merchandising, sales records, order, application and parts and service departments.

PRICE SLASHED ON QUICFREZ

A $50 slash in the price of freezers was made Wednesday by the Sanitary Refrigerator Company of Fond du Lac, Wis. The cut, which lops 10% off the price of the company's $500 Quicfrez farm locker plant, is the first to be announced in the industry since post-war production began.

In a statement announcing the reduction B. K. Miller, president of the firm, said, "We believe that the pent-up demand for quick freeze equipment which was so hard to get during the war, can be turned into a steady, long-term market by a sensible price policy. Somebody has to make the first move. Lower prices bring a dependable volume of sales and this in turn brings lower costs. Lower costs will, perhaps someday, mean still lower prices. That is the cycle in an expanding industry, which the freezer industry certainly is. The price cut is a pledge of our faith in the future demand for quick freeze equipment. My optimism is based on the growing number of uses for food freezers."

In the 12 and a half cubic foot of the Quicfrez locker plant the farmer can store up to 600 pounds of frozen meat. A farmer who butchers his own meat and stores it in this way can save half his year's meat bill. With the introduction of complete frozen meals on the market many a farmer's wife will find the freezer a means of supplementing the family income. For the city dweller the freezer will provide more and more leisure. A Sunday roast may be cooked in advance so as to make possible a quick get-away to the golf course. Meats and pies baked at leisure and quick-frozen may be stored away against the occasions when unexpected guests arrive for dinner.

The pre-war price of the Quicfrez was $395. There have been two price raises since the war. The new reduction brings the price back almost to within 10% of the pre-war level. There are many quality improvements in the post-war model.

A pioneer in the refrigeration field for 40 years, the company was one of the early firms to develop farm freezer plants. It

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brought the Quicfrez on to the market in 1939. The Quicfrez is a heavily insulated freezer containing four compartments, three for already frozen foods and one in which to freeze fresh foods. Thousands of these units are in use today on farms throughout the country.

ED MAIRE GC SALES MANAGER

GENERAL Controls Co. announces the appointment of E. B. Maire, as Regional Sales Manager of their Mid-western, Southern and Eastern Branch Office territories: Boston, New York, Philadelphia, Pittsburgh, Detroit, Cleveland, Atlanta and Chicago.

As Regional Sales Manager, Ed Maire will assist and coordinate the efforts of the above factory branch offices with the factory, relative to the Company's complete line of automatic pressure, temperature and flow controls.

G.E. PROMOTES KURUNG

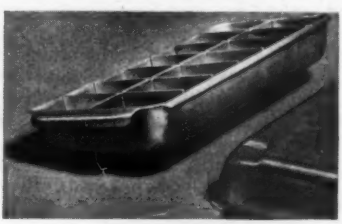
FRANK C. KURUNG, formerly assistant to the Manager of General Electric's Control Division, has been appointed Assistant to the Manager of Manufacturing of the Company's Air Conditioning Department at Bloomfield, N. J., it was announced recently.

Mr. Kurung joined the General Electric Company in 1919 as a student in the apprentice training program, and was graduated as a tool and die maker in 1924. He became associated with the Control Division in Bloomfield in 1929 and in 1937 was named Supervisor of the Planning Section. In 1941, when industry was converting to war production, Mr. Kurung was named Assistant to the Manager, in charge of manufacturing, and held this position until his present appointment.

L. M. SNELL PUCHASES SUPPLY COMPANY

THE Snell Refrigeration Supply Co., Dallas, Tex., formerly a partnership, has been purchased entirely by L. M. Snell, and will be operated by him in the future as sole owner. All liabilities of the business have been taken over by Mr. Snell and in all respects the business will be carried on as before, with the same personnel and the same direct management in charge.

FOR SALE—10,000 NEW ALUMINUM ICE CUBE TRAYS IN 3 POPULAR SIZES



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Jack Glass of Chase Refrigeration Company, left, is the outgoing chairman of the Central Refrigeration Wholesalers Association, and Lee Keeley of Airo Supply Company, right, is the newly elected chairman. The election was held December 6, in Chicago.
Photo, courtesy Herman Goldberg

C. A. McCAFFERTY DEAD

CLARENCE A. McCAFFERTY, of Refrigeration Wholesalers, Inc., which he organized May 1, 1946, passed away December 19th at his home in Duluth and was buried in Minneapolis on December 23rd. Mr. McCafferty was born in Melrose, Minn., December 8, 1900. He spent most of his early years in Two Harbors, Minn. and Superior, Wis.

C. A. McCAFFERTY

His first experience in refrigeration was with Westerlin and Campbell, St. Paul. He spent several years as serviceman with the Northern States Power Co. of Minneapolis, and in 1937 became associated with Vincent Brass & Copper Co. In 1939 he affiliated with Refrigeration and Industrial Supply Co. of Minneapolis, and with the exception of a two-year period during the war he continued with this company until May, 1946. Mr. McCafferty was an ardent fisherman and deer hunter and is pictured enjoying his favorite outdoor sport. He had been very active in association affairs, being a member of A.S.R.E. and past president of Twin Cities Chapter, R.S.E.S. He was a charter member of Head of the Lakes Chapter, R.S.E.S., Duluth, Minn.

NEW WHOLESALE HOUSE

ANNOUNCEMENT was made recently of the new Refrigeration & Air Conditioning Supply House of R. D. Marshall & Co. Inc. The company is located at North Pearl & VanWoert Sts. in Albany, New York and will serve the territory of eastern New York State bounded roughly by Kingston on the south, Little Falls on the west and north to the Canadian border. Western Mass. and Vermont will also be served.

R. D. MARSHALL K. W. SMITH

The company was incorporated Oct. 23, 1946 as a New York Corporation, with R. D. Marshall as president and treasurer, Ellen B. Marshall, vice-president and secretary and K. W. Smith as general manager.

Mr. Marshall served for the last eight years as manager of the New York office of Automatic Products Co. and before that time was associated with Delavan Engineering Co. of Des Moines, Ia. as one of the original partners. Previous to the formation of Delavan Engr. Co., Mr. Marshall was with Penn Electric Switch Co. as manager of Mid-Western Sales.

K. W. (Ken.) Smith, General Manager of the new firm, has been active in the refrigeration jobbing field for eight years. He was with Melchior, Armstrong, Dessau Co. Inc. as manager of their Albany and Manhattan branches before the war and after serving in the U. S. Army Air Corps, managed the Syracuse, N. Y. branch for the concern.

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DOVER CONCERN CHARGED WITH IMITATING PRODUCT

THE Carrier Corp. of Syracuse yesterday filed in Federal Court a complaint charging the Dover Compressor & Machine Co., Inc., of Dover with producing a refrigerant compressor in imitation of Carrier's product. The complaint calls for an injunction against further production or sale of such compressor and damages for losses allegedly sustained.

The complaint charges that the Dover concern "fraudulently procured confidential and secret information from former or present trusted employee" of Carrier. The information, the complaint states, enabled the New Jersey company to imitate designs, construction, appearance and engineering features of the compressor produced by Carrier.

* * *

NEW CATALOGS AND BULLETINS

AUTOMATIC PRODUCTS COMPANY, Milwaukee, Wis., have just issued nine supplementary sheets to their specification catalog. The sheets cover the model 205 thermostatic expansion valve; model 206 thermostatic expansion valve; model 207 thermostatic expansion valve; model 270 solenoid valve; model 71-J solenoid valve; model 66 solenoid valve; model 235 suction pressure regulating valve; miscellaneous accessories for controls; and heat regulator set.

GC AUTOMATIC CONTROLS—A 52-page Catalog pictorially illustrating General Controls' complete line of automatic pressure, temperature and flow controls for gas, oil, air, water, steam, refrigerants and other fluids for domestic, industrial, refrigeration and aircraft use, is now available. Catalog 52C gives complete engineering data, including operating pressures and list prices for all products manufactured by General Controls Co., 801 Allen Avenue, Glendale, California.

GENERAL ELECTRIC CONSUMERS INSTITUTE has released a new 32-page instruction booklet entitled "Frozen Foods—How to Prepare, Package, Freeze and Cook."

Profusely illustrated with technique photographs, the booklet gives complete information on how to effect "the miracle of frozen foods which makes many delightful dishes possible all year round."

Subjects covered in detail are: What foods may be frozen: general rules to follow; how to freeze vegetables, fruits, meat, poultry, game and fish, juices and purees, dairy products and cooked foods; how to package frozen foods; the storage life of frozen foods and how to cook frozen foods.

Covered under the general subject of how to cook frozen foods are steaming times for vegetables, methods for thawing fruits, how to cook individual cuts of meat, how to broil steaks or chops, a roast beef timing table and a timing table for broiling steaks.

Included in the publication are numerous tables simplifying the freezing and cooking processes for at-a-glance use. The booklet is available at 3 cents a copy.

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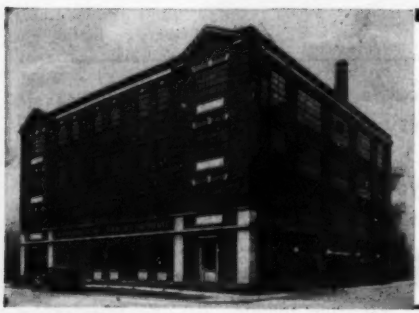

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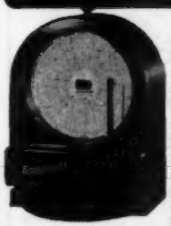

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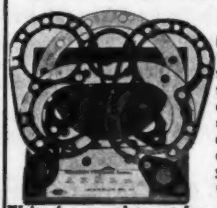

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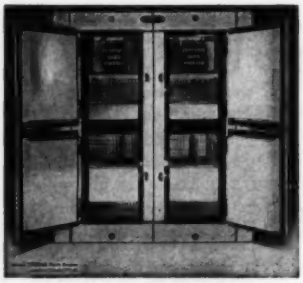

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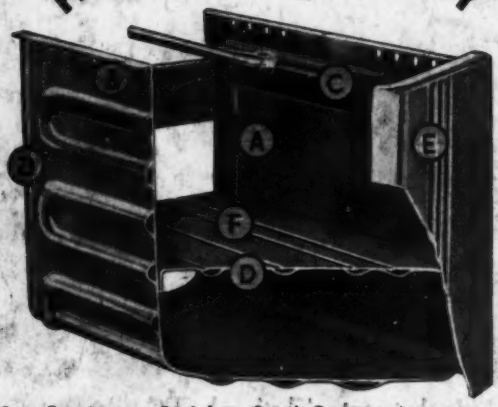

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